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THE REPORT ON THE DESIGNATION OF NOISE IN ONTARIO

VOLUME II

OCCUPATIONAL HEALTH
AND SAFETY DIVISION

MINISTRY OF LABOUR

November, 1982

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NOTE

This volume (volume II) contains a commentary on the comments received after the public meeting on January 24, 1981 and sets out the changes that have been made to the regulation following that meeting.

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ANALYSIS OF COMMENTS ON THE PROPOSED REGULATION FOR NOISE*

The analysis of comments on the proposed noise regulation follows the same format as that in the analysis of comments for the other designated substances. However, because of the large number of comments made on the proposed noise regulation and the major rearrangement in the order of sections, the following analysis appears more complex than that for the other designated substances.

The introduction in the analysis of comments is followed by a chronological account of the changes made to the proposed noise regulation as published in 1980. The comments are discussed section by section. The numbering of sections in subsequent drafts of the proposed regulation changed in some instances because some sections or subsections were deleted or added and some were relocated in the regulation so that related topics followed more logically.

Within each section, the discussion is divided into several parts:

(a) an introduction regarding the intent of the section (August, 1980 draft) and a summary of the public comments received after the proposed regulation appeared in The Ontario Gazette;

(b) revisions on the section made in light of public comment (see appendix Ja);

(c) comments received on the draft presented at the June 24, 1981 public meeting; and

(d) revisions made following the review of the comments received on the draft presented at the June 24, 1981 public meeting. The November, 1981 draft (appendix Jb) incorporates some of the comments legislative counsel made of the Lead Regulation and it also includes other pertinent comments and changes that have been made regarding

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*This is a chronological account of the changes made to the proposed regulation. The reader is advised to review carefully the final version of the regulation before reading this account. (See Appendix Jc.)

regulations for the other designated substances.

(e) the revisions made after further review of additional comments made by affected parties on the specified exposure values and the "exchange rate" (see appendix Jc). After exhaustive review it was decided that noise levels should be specified rather than time-weighted average exposure values.

Because of the complexity of the noise regulation, the reader may find it useful to have each of the drafts in hand (see appendices A, Ja, Jb and Jc) while reading the analysis of comments. The key to the revised noise regulation will aid the reader in finding appropriate sections (see page 6.3).

GENERAL COMMENTS

In August 1980, proposed regulations for seven designated substances were published in The Ontario Gazette. During the subsequent comment period, the public responded with some perceptive and constructive criticisms and suggestions. In all, more than 200 public briefs were received, of which 134 had bearing on the noise regulation. The breakdown of the initial 134 briefs is listed in the table below:

BRIEFS RECEIVED AFTER PUBLICATION OF THE 1980 PROPOSED NOISE REGULATION AND AFTER THE JUNE 24, 1981 MEETING

Respondent Group	Number of Respondents	
	After Publication	After Meeting
Companies	79	37
Trade/Industrial Associations	24	6
Labour Organizations	3	2
Safety and Industrial Hygiene Associations	13	6
Others	15	9
TOTAL	134	60

KEY TO THE REVISED NOISE REGULATION

Subject	Section of 1980 Published Regulation*	Section of Revised Regulation June/81	Nov./81	Nov./82
Definitions	1	1	1	1
Purpose of regulation	-	-	-	2
Noise as a Designated Substance	2	2	2	3
Scope of the Regulation	3	3	3	4
Exclusion of Construction Projects and Vehicle Operators and Employers of such Workers	-	3(2)	3(3)	4(3)
Exposure Limits	4(1,2)	4(1,2)	4(1,2)	5
Duty of Employers	4(3)	4(3)	4(3,4)	5 to 8
Duty of Workers	-	4(4)	4(5)	6(b), 8(2)
Defense of Failure to Comply	-	4(4)	4(6)	5(2)
Assessment of the Work Place	5	7	6	11
Establishing of a Noise Control/Hearing Conservation Program	6	8	7	12
Requirement for a Reassessment	7	9	8	13
Disputes Between Employer and Joint Health and Safety Committee	8	10	9	14
Supplying Copies of the Control Program	9	11	10	15
Use of Personal Protective Equipment	10	5	5	6,8,10
Posting of Warning Signs	-	-	-	10(3)
Medical Surveillance Program	11	14	13	17
Reporting of Impairment (Medical Findings)	12(1)	17	16	20
Provision of Medical Reports to Workers	12(2);13(4)	17(3)	16(4)	20(4)
Workers' Exposure Records	13(1);16	15	14	18
Maintaining of Medical Records	13(2,3)	16	15	19
Methods of Noise Measurement	14	12	11	9
Posting and Storage of Monitoring Results	15	13	12	16
Equivalency of Methods Specified in Codes	17	18	17	21
Revocation of s.144 of Ontario Regulation 658/79 (Regulation 692 of Revised Regulations of Ontario, 1980)	18	19	18	22
Dates on Which the Regulation Comes into Force	19	20	19	23

* See Appendix A for 1980 Published Regulation; Appendix Ja, for June 1981; Appendix Jb, for November 1981, and Appendix Jc, for November 1982.

In order to simplify the analysis of the briefs, the staff of the Standards and Programs Branch prepared a compendium of the comments by grouping them under the appropriate section of the regulation. Copies of this compendium, as well as of the briefs themselves, were placed on file in the library of the Ministry of Labour. Next, an analysis of the public commentary was undertaken by the staff of the Occupational Health and Safety Division and the main issues under each section identified. Finally, these were reviewed with the Deputy Minister, Mr. T.E. Armstrong, Q.C.; the Assistant Deputy Minister, Dr. Ann Robinson; and the Director of Legal Services, Mr. Paul Hess, Q.C. The 1980 proposed regulation for noise was then revised and was presented to interested and affected parties at a public meeting on June 24, 1981. Following that meeting, 60 additional briefs comprising some 360 pages were received and these too were reviewed. The breakdown of these briefs appears in the above table.

The 1980 proposed noise regulation was the most controversial of the seven designated substance regulations. While the notion of an assessment followed, where necessary, by a control program was generally accepted, industry objected to the proposed exposure limits, and also to the restrictions on the use of personal hearing protection as a control measure. Most comments dealt with specific points in certain sections of the 1980 proposed regulation, and many merely requested clarification.

The main areas of difficulty identified upon analysis of the comments on the 1980 proposed noise regulation were as follows:

1. Section 10, which dealt with the use of personal hearing protection to control exposure to noise, aroused considerable controversy. Many industry groups stressed that the regulation should provide for greater flexibility in the use of personal protection as a control measure. In the revised regulation several changes were made in the sections dealing with the use of personal protection.

2. The exposure limit for noise: most industry groups wanted a limit of 90 dBA while labour groups wanted the limit set at 85 dBA for existing equipment and 80 dBA for new equipment, a target that labour groups consider the lowest level technologically feasible.

3. The provisions in sections 12(2) and 13(4) which allowed the release of the results of medical examinations and tests and medical records to the worker's authorized agent were interpreted by some respondents as a violation of medical confidentiality. The revisions made to these sections take into account the recommendations of The Honourable Mr. Justice Horace Krever in the Report on the Commission of Inquiry into the Confidentiality of Health Information which was published during the review of the comments.

4. The construction industry argued that the form of the regulation was designed for industrial settings and that the industry would prefer to see a regulation specific to the construction industry, based on "control by procedure" with reliance on personal protection to control exposure. The construction industry has been excluded from the present regulation and a separate regulation specific to the industry is being prepared.

A number of other issues were also raised, as follows:

- A number of respondents stated that the hearing loss criteria for reporting to the Ministry were much too sensitive.

- There was some concern about the role of the joint health and safety committee during the assessment and during development of the noise control program.

- Some of the details that were required to be entered into a worker's exposure record were questioned, in particular, the maiden name of the worker's mother.

Comments on the June, 1981 revision of the proposed regulation ranged from "the document regulation plus codes promises to be perhaps the best occupational noise regulation in at least North America" to "the proposed regulation is ... needlessly complex" and "not workable"; they should "be put back to the committee to be further reviewed, refined and put back into the perspective of our internal responsibility system". In general, the June 24, 1981 revised regulation received much better acceptance than the 1980 proposed regulation.

The main concerns arising from the June, 1981 revision of the proposed noise regulation are:

(1) at the public meeting the 90 dBA level for engineering controls was opposed strongly by organized labour but only one union local has confirmed this opposition in writing; additionally, enforcement of noise limits is considered insufficient by labour groups;

(2) the 3 dB exchange rate is opposed by some sectors of industry which want a return of the 5 dB exchange rate, whereas the 3 dB exchange rate is supported by Ontario Hydro, Hatch Associates, various standards-setting organizations, the scientific community, and numerous other jurisdictions;

(3) the 10 dB hearing loss criterion is considered impracticable by the audiometry community;

(4) it is not certain whether sufficient physicians skilled in hearing loss problems are available in Ontario; and

(5) unless hearing loss results are made available to the employer in some form, he will not know where corrective measures are needed.

The analysis of comments received on the 1980 proposed noise regulation, the additional comments received following the June 24, 1981 public meeting on the noise regulation and the position taken by the Ministry are summarized in the following sections.

DEFINITIONS

In section 1, definitions for terms used in noise measurement were given.

While definitions were not a major issue in the 1980 proposed noise regulation, several respondents requested that definitions be rewritten for greater clarity or accuracy, and some suggested that other definitions be included; specifically, "exposure", "noise", "steady noise" and "week" or "work week".

The Society of the Plastics Industry of Canada suggested that "noise of 80 dBA or over" be prescribed instead of just "noise", to reduce administration for those whose work places are below that level. Another approach might be to define "noise" as "sound levels over 80 dBA". This provision is considered desirable as it restricts the application of the regulation to work places with potential for harmful noise exposure. A definition of noise as "an acoustical signal greater than 80 dB(A)" was included in section 1 of the 1980 proposed regulation.

Revision of the 1980 Proposed Regulation, Section 1 - Definitions

In response to these suggestions a number of changes were made to the definitions, and a definition of noise as being an acoustical signal greater than 80 dBA was added. The section, as presented at the June, 1981 meeting, reads as follows:

"1. In this Regulation,

(a) "noise" means an acoustical signal greater than 80 dB(A).

(b) "decibel" or "dB" means a unit of measurement for sound pressure level.

(c) "sound pressure level" ("spl") when measured in units of dB means 20 times the logarithm to the base 10 of the ratio of the root mean square ("rms") pressure of a sound to the root mean square of the reference pressure using a reference of 20 micropascals.

(d) "decibels A-weighted" or "dB(A)" means a unit of measurement of spl corrected to the A-weighted scale.

(e) "impulse noise" and "impact noise" mean an impulsive sound caused by collision of solids or sudden change in gases, either as a single pressure pulse or a single burst (multiple pressure pulses) having a duration less than one second with an interval between pulses greater than one second.

(f) "equivalent continuous sound level" ("Leq") means that sound level in dB(A) which, if present for 40 hours in 1 week, would contain the same total acoustic energy as the various measured sound levels over 1 week."

Comments Received after the June 24, 1981 Meeting

Several commenters suggested the inclusion of definitions for "sound level" and "sound pressure level". Definitions of these are now in sections 1(i) and 1(j), respectively, of the November, 1981 revision of the proposed regulation. To maintain consistency with the other proposed Designated Substance Regulations, the definition of "joint health and safety committee" was added to section 1.

The Canadian Standards Association (CSA) indicated that in Canada the symbol for "decibels A-weighted" is "dBA"; therefore, all references to "dB(A)" have been changed to "dBA". The CSA suggested some other changes to the definitions for improved clarity and accuracy. With reference to "equivalent continuous sound level ("L_{eq}")", the CSA stated the following:

> "There is a serious error in the ISO standard 1999. They have confused the meaning of the terms for equivalent sound pressure level and equivalent continuous sound pressure level. It is our considered opinion that the latter term is misleading. In fact, many of our members did not pick out the significance until you described what you are trying to do. We therefore strongly recommend the use of the term equivalent sound exposure level (symbol L_{ex}) where you compress a sound exposure into less or more time than the measured data accounts for. The term equivalent continuous sound level (symbol L_{eq}) is to be used only where the time of interest is the same as the measurement time."

Revisions Made After The June 24, 1981 Meeting, Section on Definitions

Additional definitions for "highway" and "vehicle" were included to deal with the exemption being given to employers and workers working on or in vehicles as discussed under Section 3. All definitions were re-arranged into alphabetical order.

The CSA recommendations were accepted and section 1 was revised to read in the November 23, 1981 version of the proposed regulation as follows:

"1. In this Regulation,

(a) "A-weighting" means A-weighting as defined by the International Electrotechnical Commission (IEC) Standard 651-1979;

(b) "decibel" ("dB") means a dimensionless unit of sound pressure level or sound level;

(c) "decibel A-weighted" ("dBA") means a unit of sound pressure level modified by A-weighting;

(d) "equivalent sound exposure level" ("L_{ex}") means the steady sound level in dBA which, if present in a work place for 40 hours in one week, would contain the same total acoustic energy as that generated by the actual and varying sound levels to which a worker is taken to be exposed in one work week;

(e) "highway" means a highway as defined in the Highway Traffic Act;

(f) "impulse noise" and "impact noise" mean an impulsive sound caused by collision of solids or sudden pressure change in gases, either as a single pressure pulse or a single burst (multiple pressure pulses) having a duration less than one second with an interval between pulses greater than one second;

(g) "joint health and safety committee" includes a joint health and safety committee established under section 8 of the Act, a committee of like nature and the workers or their representatives who participate in an arrangement, program or system conforming to subsection 8(2) of the Act;

(h) "noise" means a sound with an A-weighted sound pressure level equal to or greater than 80 dBA;

(i) "sound level" means the A-weighted sound pressure level;

(j) "sound pressure level" ("L_p") means 20 times the logarithm to the base 10 of the ratio of the root mean square ("rms") pressure of a sound to the root mean square of the reference pressure of 20 micropascals; and

(k) "vehicle" means a vehicle as defined in the Highway Traffic Act."

Because of the fundamental changes made with respect to the control of exposures to noise which are discussed below under the heading Exposure Limits, subsection (d) was deleted so that the section (in the November, 1982 version) now reads:

"1. In this Regulation,

(a) "A-weighting" means A-weighting as defined by the International Electrotechnical Commission (IEC) Standard 651-1979;

(b) "decibel" ("dB") means a dimensionless unit of sound pressure level or sound level;

(c) "decibel A-weighted" ("dBA") means a unit of sound pressure level modified by A-weighting;

(d) "highway" means a highway as defined in the Highway Traffic Act;

(e) "impulse noise" and "impact noise" mean an impulsive sound caused by collision of solids or sudden pressure change in gases, either as a single pressure pulse or a single burst (multiple pressure pulses) having a duration less than one second with an interval between pulses greater than one second;

(f) "joint health and safety committee" includes a joint health and safety committee established under section 8 of the Act, a committee of like nature and the workers or their representatives who participate in an arrangement, program or system conforming to subsection 8(2) of the Act;

(g) "noise" means a sound with an A-weighted sound pressure level equal to or greater than 80 dBA;

(h) "sound level" means the A-weighted sound pressure level;

(i) "sound pressure level" ("L_p") means 20 times the logarithm to the base 10 of the ratio of the root mean square ("rms") pressure of a sound to the root mean square of the reference pressure of 20 micropascals; and

(j) "vehicle" means a vehicle as defined in the Highway Traffic Act."

NOISE AS A DESIGNATED SUBSTANCE

Section 2 of the 1980 and 1981 versions of the regulation prescribed noise as a designated substance. Four commenters objected to the designation of noise (Canadian Salt Company, Kelsey Hayes, General Stampings and IMC Chemical.) One comment suggested exemptions for businesses with less than 100 employees (Hoffman Concrete); another (National Auto Radiator) suggested that the government provide financial assistance to comply.

Revision of the 1980 Proposed Regulation, Section 2 - Noise as a Designated Substance

Section 2 has been left unchanged.

"2. Noise is prescribed as a designated substance."

Comments Received after the June 24, 1981 Meeting

No comments on this section were received following the meeting and the wording of section 2 remains unchanged but the section was renumbered 3.

Section 3 in the November, 1982 version reads:

"3. Noise is prescribed as a designated substance."

Because of the fundamental changes made with respect to the control of exposure to noise (see the Exposure Limits section below) a new section was drafted and inserted in the November, 1982 version of the regulation. The new section sets out the purpose of the regulation and states that the reduction of sound levels of noise to levels that are as low as can be reasonably achieved is the principle upon which the regulation is based.

The new section in the November, 1982 version of the regulation reads:

"2. The purpose of this Regulation is the reduction of noise to the lowest practical level so as to afford maximum protection to workers."

SCOPE OF THE REGULATION

Section 3 of the 1980 and 1981 versions of the regulation dealt with the application of the regulation and specified that it applied to every employer at a work place "where a worker is likely to be exposed to noise" exceeding the exposures prescribed by section 4.

Application of the Regulation

The comments by organized labour to the effect that the application of the regulation should not be dependent on the assessment undertaken by the employer were noted. Under section 7(3) of the June, 1981 regulation, the employer was required to consult with the joint health and safety committee when making the assessment. Furthermore, a new subsection 7(4) in the June, 1981 version required that the employer give a written copy of the assessment to the joint health and safety committee, which copy must be available for an inspector under section 28 of the Occupational Health and Safety Act, R.S.O. 1980, c.321. An inspector may be called in if there is dissatisfaction with the employer's assessment and he may

make an order under section 29 of the Act.

The Advisory Council on Occupational Health and Occupational Safety has recommended that assessments should be conducted only where the levels reach or exceed 80 dBA. After further consideration it was considered that noise should be defined as sound pressure level greater than 80 dBA and that assessments should be conducted at that level, since there is no significant hearing loss at 80 dBA. Assessments undertaken at that level will identify the need for a hearing conservation program.

Responsibility for the Workers of Contractors

B.F. Goodrich and Imperial Oil questioned whether the work place noise control program, including medical examinations and record-keeping, would be required for workers employed by contractors on an employer's premises. Specifically, the respondents wanted to know who was responsible for the contractor's employees: the contractor or the company.

This question was referred to legal counsel who indicated that at work places it is the duty of the employer to provide a safe and healthy working environment and since a contractor is an employer, the contractor is responsible for his own workers.

Exclusion of Construction Sites

The Construction Safety Association of Ontario on behalf of the construction industry, both labour and management, had strong objections to the proposed designated substances regulations. It was argued that the regulations as written were designed for the relatively consistent working conditions found in industrial settings and therefore could not be totally applied to the variable conditions that exist at construction sites. The industry would prefer a different regulatory approach, namely "control by procedure", with worker exposure controlled almost exclusively by personal protective equipment. Medical examinations, monitoring and record-keeping would only be required if so ordered by a Director. A suggested draft regulation specific to the construction industry was submitted to the Ministry.

To deal with the concerns of the construction industry, a new section, 3(2), was added to exclude this industry from the regulation. A regulation specific to the construction industry is being developed separately. In the U.S.A., OSHA has excluded the construction industry from the hearing conservation amendment dated January 16, 1981 (Federal Register 46; 4078).

Revision of the 1980 Proposed Regulation, Section 3 - Scope of the Regulation

The wording of section 3 reads as follows in the June 1981 version:

> "3. (1) Subject to subsection 2, this Regulation applies to every employer at a work place where a worker is likely to be exposed to noise."

To deal with the concerns of the construction industry, a new subsection was added that reads as follows:

> "3. (2) This Regulation does not apply to a constructor or to an employer on a construction project in respect of those workers who work at or on the project."

Comments Received After the June 24, 1981 Meeting - Section on the Scope of the Regulation

Both Stelco and Algoma suggested that it should be specified that the noise regulation applies to the worker as well as the employer.

The Ontario Trucking Association (OTA) expressed willingness to comply with the proposed noise regulation. However, the OTA stated that the trucking industry has unique noise problems as does the construction industry and has requested that they be exempted, at least initially, from the 90 dBA limit and the use of hearing protection equipment, until the noise exposure requirements of the regulation can be met. The OTA indicated that new trucks meet the federal and Ontario Ministry of the Environment noise standards, but would not meet the requirements of the Ministry of Labour noise regulation. Furthermore, it was pointed out that the proposed regulation, as written, bases the engineering compliance standard on worker exposure (that is, "dose" received) rather than on the noise level emitted from the source. On the other hand, the hearing conservation program is to be

instituted at the noise level of 85 dBA rather than at a level based on worker exposure. This was seen by the OTA and some other respondents as two standards or, at least, as one inconsistant standard rather than two action levels.

Furthermore, the Ontario Trucking Association (OTA) stated that:

> "the additional requirement that any noise level inside a work place that exceeds 85 dBA must be dealt with by personal protection or other engineering initiatives or by limited exposure, will also have a serious impact on our industry. Even the best vehicles on the road today including those equipped with air conditioning and all of the latest noise attenuation devices under ideal circumstances will exceed that level in their upper gear ranges, which are those most frequently used in inter-city trucking."

In a meeting with representatives from the association, they indicated that the cost of retrofitting some 200,000 trucks, including about 50,000 trucks capable of carrying loads greater than 10,000 pounds, would be immense. Furthermore, while the wearing of hearing protection equipment is not prohibited by law, the OTA representatives believed that this practice is not encouraged or condoned and would present problems in areas of worker compliance and enforcement.

Revisions Made After the June 24, 1981 Meeting - Section on the Scope of The Regulation

The word "worker" was added to section 3 (1) as suggested by Algoma and Stelco, and the section was expanded and reworded to make the format the same as that in the other designated substances regulations. The request of the Ontario Trucking Association is being included in a separate noise regulation which will apply to the construction industry and to employers and workers in or on a vehicle on a highway.

Section 3 of the November, 1981 revised regulation reads as follows:

"3. (1) Subject to subsection (3) this Regulation applies to every employer and worker at a work place where a worker is likely to be exposed to noise.

(2) Subject to subsection (3), an employer to whom this Regulation applies shall take every precaution reasonable in the circumstances to

ensure that every worker who is not an employee of the employer but is working in the work place of the employer and is exposed* to noise and whose health is likely to be affected thereby is protected and the worker shall comply with the requirements of the employer.

(3) Subsection 3(2) and sections 4 to 18 of this Regulation do not apply to

(a) a constructor, an employer who is carrying out a project or a worker on or at a project; or

(b) an employer or a worker in or on a vehicle on a highway and such a worker."

As a direct consequence of the changes made with respect to exposure to noise the word "exposed" (see asterik above) was changed to "subjected" and the references in subsection 3(3) to other sections in the regulation were all changed. The section was renumbered 4 in the November, 1982 version and now reads:

"4. (1) Subject to subsection (3), this Regulation applies to every employer and worker at a work place where a worker is likely to be exposed to noise.

(2) Subject to subsection (3), an employer to whom this Regulation applies shall take every precaution reasonable in the circumstances to ensure that every worker who is not an employee of the employer but is working in the work place of the employer and is subjected to noise and whose health is likely to be affected thereby is protected and the worker shall comply with the requirements of the employer.

(3) Subsection 4(2) and sections 5 to 24 of this Regulation do not apply to,

(a) a constructor, an employer who is carrying out a project or a worker working on or at a project; or

(b) an employer in respect of a worker in or on a vehicle being operated on a highway or to such a worker."

EXPOSURE LIMITS

The exposure limits for noise were presented in section 4 of the 1980 proposed regulation.

There were four main issues in the responses received with respect to section 4 as follows:

- the numerical values of the exposure limits selected for inclusion in the regulation;
- the methods for complying with the exposure limits;
- the merits of a limit based on 40-hour rather than 8-hour exposure;
- the time vs. noise level trade off: 3 dB or 5 dB doubling.

The Numerical Value of the Exposure Limits

There was overwhelming industry disagreement with the 1980 proposed noise regulation. Forty-seven (47) briefs supported the current 90 dBA 8- hour exposure limit, six (6) supported the proposed 85 dBA limit. Among the proponents of 90 dBA were:

Algoma
Chrysler Canada
Du Pont
Ford Canada
Stelco
Canadian Chemical Producers' Association (CCPA)
Canadian Federation Of Independent Businesses (CFIB)
Canadian Manufacturers' Association (CMA)
Canadian Paint Manufacturers' Association
(now "Canadian Paint and Coatings Association")
Construction Safety Association of Ontario (CSAO)
Industrial Accident Prevention Association (IAPA)
Mines Accident Prevention Association of Ontario (MAPAO)
Ministry of Transport and Communications (MTC)
Society of the Plastics Industry of Canada (SPI)

85 dBA was supported by:

Bilsom International Limited
Canadian Hearing Society
Gulf Canada
Hatch Associates
Lear Siegler Industries
Ontario Federation of Labour (OFL)

The Council of Safety Associations, IAPA, Atlas Steel, CMA, Stelco, MAPAO, Inco and Ontario Meat Packers Safety Council specifically endorsed the recommendations of the Advisory Council. Finally, the OFL and the Confederation of Canadian Unions (CCU) favoured a limit of 80 dBA for new plants.

Use of Personal Protective Equipment to Comply with the Limits

Seventeen briefs commented that the use of personal protective equipment should be allowed for purposes of compliance with the exposure limits and that the phrase "otherwise than by requiring a worker to wear and use personal hearing protection" should be removed from section 4. Restriction on the use of personal hearing protection was retained because the use of such equipment has presented problems in the consistency and enforcement of its correct use. Furthermore, reduction of worker exposure to noise by means other than personal hearing protection affords better protection for the worker. However, greater flexibility in the use of personal protection was provided for by revisions to section 10 of the proposed regulation dealing with the use of personal hearing protection.

40-Hour Versus 8-Hour Exposure Criterion Duration

Seven commenters favoured a criterion duration of 40 hours instead of 8 hours; these were Ontario Hydro, IAPA, Du Pont, SPI, Dofasco, CCPA, and the Council of Safety Associations. Dofasco summarized its support as follows:

> "Long-term exposure to noise is required to induce hearing loss. An 8-hour period is technically and medically inappropriate. A 40-hour period is the best compromise and it provides a more statistically sound base for epidemiological studies."

3 dB or 5 dB Time Versus Level Trade Off

Another issue was whether a 3 dB or 5 dB doubling or exchange rate should be used; that is, whether the exposure time should be halved when the noise level increases by 3 dB or by 5 dB. Industry generally supported an exchange rate of 5 dB; Ontario Hydro, Hatch Associates, Health and Welfare Canada, Canadian Standards Association, Canadian Acoustical Association, National Research Council of Canada, the Confederation of Canadian Unions and the OFL supported the 3 dB exchange rate.

Revision of the 1980 Proposed Regulation, Section 4 - Exposure Limits

In the revision of the proposed regulation the recommendations of the Advisory Council on Occupational Health and Occupational Safety were taken into account. The Council recommended use of engineering controls above 90 dBA where possible, and mandatory use of personal hearing protection where control to 90 dBA was not possible, regardless of exposure duration.

The Council also expressed the belief that employers should be required to issue personal hearing protection to employees exposed to 85 dBA or more. However, realizing that employees may not perceive sound levels under 90 dBA as being hazardous, the Council suggested that "the use of personal protective equipment in work places having sound levels between 85 and 89 dBA should be voluntary". In these circumstances the wearing of hearing protection equipment should be encouraged by education programs, but it should be mandatory in all work places with employees exposed to 90 dBA or more. It was also recommended that audiometric testing be commenced when workers are exposed to 85 dBA, or more, for 4 or more hours per day. The Council did not address the issue concerning the use of an exchange rate of 3 dB or 5 dB.

In light of all of the above comments, the proposed regulation was revised (June, 1981) to include a number of interlocking features which, when taken together, provide effective protection. These features include:

- assessment at a sound level of 80 dBA;

- a hearing conservation program at a sound level of 85 dBA;

- a compliance level (40-hour L_{eq}) for engineering controls of 90 dBA; and

- an exchange rate of 3 dB.

Section 4 of the June 24, 1981 revision reads as follows:

"4. (1) Subject to subsections 2 and 3, every employer shall take all necessary measures and procedures by means of engineering controls, work practice controls and hygiene practices and facilities to ensure that the exposure of a worker to noise does not exceed the equivalent continuous sound level (L_{eq}) of 90 dBA for a 40-hour work week as determined in accordance with the International Organization for Standardization (ISO) Reference No. 1999-1975 (E).

(2) Every employer shall take all necessary measures and procedures by means of engineering controls and work practice controls to ensure that the exposure of a worker to noise which is not impulse or impact at no time exceeds 115 dB(A).

(3) Every employer shall take all necessary measures and procedures by means of engineering controls and work practice controls to ensure that the exposure of a worker to impulse or impact noise does not exceed the peak sound pressure level measured in units of dB set forth in column 1 of the following table for the maximum number of impulses set out thereto in column 2:

Column 1 Peak Sound Pressure Level dB	Column 2 Maximum Number of Impulses per 8 hour day
115	10,000
125	1,000
135	100
greater than 135	0

(4) Where an employer can prove that all steps reasonable in the circumstances have been taken to require a worker to work in

compliance with necessary measures and procedures that are work practice controls as prescribed by subsection 1, the employer does not contravene subsection 1 in respect of a worker who fails to work in compliance therewith."

Comments Received After the June 24, 1981 Meeting - Section on The Exposure Limits

Exposure Limit

Generally, industry accepted the 90 dBA limit proposed in the June, 1981 revised regulation. However, representatives from Lear Siegler Industries indicated that "compliance with this (noise) standard may be impossible in the metal stamping industry". The IMC Chemical Group stated that the equivalent continuous sound level of 90 dBA may be excellent in theory but "will prove to be hopeless in practice" because it will not be "practicable to monitor the exposures of the workers who move randomly from one building to another throughout their working careers, e.g., maintenance men, supervisors, and lift truck drivers". Such situations can be monitored by having the worker wear a noise dosimeter.

At the public meeting, organized labour stongly opposed the 90 dBA limit, but only one union local (Sudbury Mine, Mill and Smelter Workers' Union) confirmed this opposition in writing.

L_{eq} - Equivalent Continuous Sound Level

In section 4(1) the term "L_{eq}", equivalent continuous sound level, was replaced by "L_{ex}", equivalent sound exposure level. This change was suggested by the Canadian Standards Association, as discussed in the comments pertaining to section 1. The term L_{ex} allows for normalizing the exposure to noise for a 40-hour work week. For work weeks of duration other than 40 hours, L_{ex}, strictly speaking, is not an "average". In the analogous terminology of the Lead Regulation, the "cummulative weekly exposure" to noise is divided by 40, not by the actual number of hours during which the worker is exposed to noise. The term L_{eq}, by definition, is to be used only where the time of interest (e.g. 40 hours) is the same as the measurement time. No other comments on L_{eq} were received.

Exchange Rate

There were many objections to the change in the exchange rate from 5 dB to 3 dB. The followimg recommended that the 5 dB exchange rate be retained:

Algoma
American Industrial Hygiene Association
B. F. Goodrich
Boise Cascade
Canadian Battery Manufacturers' Association
Canadian Chemical Producers' Association
Chrysler Canada
Cliffs of Canada
Dow Chemical
Du Pont
Ford
General Motors of Canada
Inco
John Deere
Petrosar
Society of the Plastics Industry of Canada

About half of the respondents recommending that the 5 dB exchange rate be retained did so only in their comments on the Code for Noise Measurement where the 3 dB exchange rate is specifically mentioned and not in their comments on the regulation. However, they did not criticize the concept of L_{eq}. This observation may be interpreted to mean that the respondents did not understand the concept of L_{eq} which requires the use of a 3 dB exchange rate.

Various respondents commented that the L_{eq} with its 3 dB exchange rate is "an impractical concept" and is "alien to the Canadian scene, where the ACGIH concept (5 dB doubling) has served us well for many years".

Implementation of the 3 dB exchange rate, the respondents added,

- "will more than double the number of workers and employers impacted relative to the current limit of 90 dBA (TWA) (5 dB) doubling";

- may require "scrapping good equipment and purchasing replacement dosimeters, which are very high priced, and could place an economic burden upon the smaller companies in particular";

- "means that thousands of eight hour noise exposure readings collected over ... past ... years are invalid"; and

- will make it "difficult to compare technical and medical (epidemiological) data with these jurisdication (other provinces and the U.S.) or with previous data collected in Ontario".

Several respondents expressed the belief that there was no scientific basis for changing to the 3 dB exchange rate. Contrary to these claims, staff in the Occupational Health Branch and the Special Studies and Services Branch believe, on the basis of their studies and supporting advice from scientific bodies including the National Research Council of Canada and the Canadian Standards Association, that the 3 dB exchange rate is justified.

The following comments on the exchange rate (or trading relationship) were made in the Health Criteria Document (appendix F):

> "There is some controversy as to the appropriate trading relationship between noise level and exposure duration during the working day. Studies of long term industrial exposures appear to be consistent with the equal energy hypothesis that a given amount of acoustical energy produces the same amount of damage, no matter over what time interval it is delivered. This rule, which appears to be valid for industrial exposures of one month or more leads to a decrease of sound level of 3 dB for every doubling of exposure time, or an increase of 3 dB for every halving of exposure time. The 3-dB rule has been widely adopted in Europe.
>
> "Experimental work on TTS suggests that for fluctuating and intermittent exposures during the working day, the ear may be more tolerant than the 3-dB rule would imply. This has led to the alternative proposal of the 5-dB trading relation, as adopted by OSHA in the United States. The author of this review feels that the connection between TTS and permanent damage is speculative and on very shaky ground. The equal-energy hypothesis is consistent with the results of industrial studies and should be adopted as the basis of hearing conservation measures until such a time as it has been replaced by another scientifically established framework. It is in this light that the 3-dB trading relation is recommended."

The International Organization for Standardization, of which Canada is a member, has recommended the 3 dB exchange rate. British Columbia, Saskatchewan and the majority of countries having occupational noise laws or guidelines use the 3 dB exchange rate (see table 1 following).

The Treasury Board of Canada has prepared a draft regulation in which the use of the 3 dB exchange rate is being recommended. If passed, this regulation would affect 250,000 federal civil servants. The draft noise regulation in Manitoba also

TABLE 1: Summary of Occupational Noise Limits in Other Jurisdictions

Country	Law or Guideline	Existing 8-hour limit dBA	Max. dBA	Trading Ratio
Australia	G	90	115	3
Austria	L (1974)	85		3
Belgium		90	110	3
Canada	L (Federal)	90	115	5
Czechoslovakia		85		5
Denmark	G (1974)	90		3
Finland	L (1974)	85		
France	L (1975)	90		3
E. Germany	L (1960)	85		
W. Germany	L (1970)	90		3
Italy	L (1956)	90	115	5
Japan	G	90		
S. Africa	L	85		3
Sweden	G	85		3
Switzerland	G	90 + 2		3
United Kingdom	G	$\overline{90}$	135	3
USSR	L	85		3
U.S.	L	90	115	5
Yugoslavia	L (1971)	90		5

proposes the 3 dB exchange rate. The Ontario Ministry of the Environment uses the 3 dB exchange rate and the United States Environmental Protection Agency has recommended its adoption.

In its comments on the regulation, the Canadian Standards Association concurred that "from a technical point of view ... the use of the 3 dB exchange rate is justified, particularly with respect to impact measurements". A similar viewpoint has been expressed by staff of the National Research Council of Canada, Health and Welfare Canada, U.S. National Institute of Occupational Safety and Health, U.S. Environmental Protection Agency, instrument manufacturers, and various acoustics consultants, among others, which indicates that the general scientific community supports the 3 dB exchange rate. Hatch Associates stated that "the adoption of $L_{eq}(40)$ as a criterion is a very positive step allowing simpler assessment, prediction and analysis and providing greater protection against high sound levels".

The Advisory Council indicated in the council memorandum 79-III (January 14, 1980) that more workers would be covered by an exposure criterion using 3 dB doubling than by one using 5 dB doubling. This view was echoed by some respondents. However, no data have been presented which indicate the increased number of workers that would be affected.

Without a lengthy, comprehensive and expensive study these numbers cannot be determined. The associated increased cost cannot be estimated reliably until the number of workers is known. However, the choice of the 3 dB exhange rate is unlikely to place a heavy economic burden on companies. The cost of noise dosimeters based on a 3 or 5 dB exchange rate is equivalent and the conversion of old instruments based on a 5 dB rate is only about $200 per instrument.

The largest costs associated with compliance would be incurred in developing and maintaining appropriate engineering controls which are required no matter which exchange rate is chosen.

An exposure criterion level of 90 dBA is less stringent and less expensive with respect to the implementation of engineering controls than the 85 dBA exposure criterion specified in the 1980 draft regulation. At the same time, the 1981 proposed regulation still afforded workers better protection by:

(1) requiring a noise assessment program at sound levels equal to or greater than 80 dBA;

(2) requiring hearing conservation programs when noise levels reach 85 dBA, and

(3) specifying the 3 dB exchange rate which

  (a) shortens exposure times, compared to those allowed using the 5 dB exchange rate, at the noise levels above the criterion level of 90 dBA where the risk of hearing impairment is greatest, and

  (b) allows for increased exposure times over the criterion sound duration of 40 hours when the noise level is below the criterion level of 90 dBA (L_{ex}) where the risk of hearing impairment is lower.

In summary the 3 dB exchange rate was favoured for use in the June, 1981 version of the proposed noise regulation because of:

(a) the epidemiological data that support the establishment of damage risk criteria;

(b) the recommendation of the International Standards Organization which Canada supports;

(c) the greater accuracy of noise measurements using the 3 dB exchange rate;

(d) the support for the 3 dB exchange by: Canadian Standards Association, Canadian Acoustical Association, National Research Council of Canada, Health and Welfare Canada, National Institute of Occupational Safety and Health (U.S.A.), Environmental Protection Agency (U.S.A.);

(e) some companies having already purchased new noise measurement instruments calibrated for the 3 dB exchange rate;

(f) little economic burden will be placed on companies. The cost of noise dosimeters based on a 3 or 5 dB exchange rate is equivalent and the conversion of old instruments based on a 5 dB rate is only about $200 per instrument.

Revision Made After The June 24, 1981 Meeting - Section on The Exposure Limit

The numerical values of the exchange rate and exposure limit were not changed, but L_{eq} equivalent continuous sound level, was changed to L_{ex}, equivalent sound exposure level. The reference to the International Organization for Standardization was removed from section 4(1) since this group does not define "L_{ex}".

Section 4(1) of the June, 1981 revised regulation was changed further to make the wording consistent with that in the Lead Regulation and in other designated substances regulations and read as follows in the November, 1981 revised

regulation:

> "4. (1) Every employer shall take all necessary measures and procedures by means of engineering controls, work practices and hygiene practices and facilities to ensure that the exposure of a worker to noise during a work week does not exceed an equivalent sound exposure level (L_{ex}) of 90 dBA."

Comments Received After the June, 1981 Meeting - Section on the Maximum Exposure Limits

No new issues were raised in the briefs received since the June public meeting. Since section 4(3) was deleted from the June, 1981 revised regulation in the preparation of the November, 1981 revision, the limit for peak sound pressure for impact noise was incorporated into section 4(2). This section was modified slightly to make the wording consistent with that in the Lead Regulation and the November, 1981 version reads as follows:

> "4. (2) Notwithstanding subsection (1), every employer shall take all necessary measures and procedures by means of engineering controls, work practices and hygiene practices and facilities to ensure that the exposure of a worker to noise which is not impulse or impact noise at no time exceeds 115 dBA, and in the case of exposure to impulse or impact noise, 135 dB."

Comments Received After the June 24, 1981 Meeting - Section on the Exposure to Impulse Noise

No new issues were raised in the briefs received since the June 24, 1981 meeting.

Revisions Made After the June, 1981 Meeting - Section on the Exposure to Impulse Noise

This section was removed since it was considered redundant. Calculations for determining exposure to noise, both impact or impulse and non-impact, are covered by the provisions in section 4(1). Furthermore, the data in the table in section 4(3) of the June, 1981 revision of the proposed regulation assumed an idealized peak duration of 100 milliseconds. Peak durations of 10-1000

milliseconds are typical in industrial situations. Therefore, the actual exposure of a worker to impulse noise could be a factor of 10 higher or lower than that derived from the table.

The deleted section 4(3) of the June, 1981 revised regulation was replaced with a new section 4(3) in the November, 1981 revision. This new section 4(3) in the proposed noise regulation is analogous to section 4(3) of the Lead Regulation and reads as follows:

> "4. (3) Subject to section 5, every employer shall comply with subsections (1) and (2) without requiring a worker to wear and use hearing protection equipment."

Comments Received After the June 24, 1981 Meeting - Section on the Duty of Workers/Defence of Employer

No new issues were raised in the briefs received since the public meeting.

Revisions Made After the June 24, 1981 Meeting - Section on Duty of Worker/Defence of Employer

Section 4(4) of the June, 1981 version was reworded and split into two sections, which were renumbered 4(5) and 4(6), in keeping with the wording of other designated substances regulations. A new section 4(4) was included to reference the method for determining the exposure of a worker to noise. These sections in the November, 1981 proposed regulation read as follows:

> "4. (4) Subject to section 17, the equivalent sound exposure level of noise to which a worker is exposed shall be calculated in accordance with the provisions determined in the Code for Noise Measurement dated the 23rd day of November, 1981, and issued by the Ministry.
>
> (5) Every worker shall work in compliance with the work practices and hygiene practices in accordance with the provisions of the hearing conservation program.
>
> (6) On a prosecution for a failure to comply with subsection (1) or (2) it shall be a defence for an employer to prove that he has complied

with subsection (1) or (2) and that a breach of subsection (1) or (2) occurred solely because a worker failed to work in compliance with the work practices and hygiene practices in accordance with the provisions of the hearing conservation program and the employer has taken every precaution reasonable in the circumstances to require the worker to do so."

Because of the continuing controversy with respect to the exposure value, the exchange rate and measurement of exposure it was decided that some provisions should be provided for in the noise regulation while the issue of the exchange rate was subjected to further study. Section 4 as drafted in the November, 1981 version was therefore removed and replaced by two new sections:

1. Section 5 requiring engineering controls to reduce noise levels to 90 dBA and the "lowest practical level" and

2. Section 8 requiring hearing protection to be provided on a mandatory basis at noise levels of 85 dBA or greater.

Sections 5 and 8 in the November, 1982 version read as follows:

"5. (1) Where the sound level of noise in a work place to which a worker is or would be subjected is greater than 90 dBA the employer shall take all necessary measures by means of engineering controls to ensure that the sound level is reduced to the lowest practical level and in any case the level be reduced to 90 dBA."

(2) On a prosecution for a failure to comply with subsection (1) it shall be a defence for an employer to prove that he has complied with subsection (1) and that a breach of subsection (1) occurred solely because a worker failed to work in compliance with work practices specified in the hearing conservation program established under subsection 12(2).

"8. Where the sound level of noise in a work place to which a worker is or would be subjected is equal to or greater than 85 dBA for four hours or more in a work day, the employer shall provide hearing protection equipment to the worker and the equipment shall be used by the

worker."

In keeping with the purpose of the proposed noise regulation (see section 2 of the November, 1982 version), a new section, 7, was drafted to require that new knowledge and technology be utilized to reduce sound levels below that mentioned in section 5 of the November, 1982 proposed regulation. This section reads as follows:

> "7. Where engineering controls come into existence through the development of knowledge and technology and would, if adopted and implemented by an employer, reduce the sound level below the sound level mentioned in section 5, the employer shall adopt and implement the engineering controls where it is reasonable or practical so to do."

ASSESSMENT OF THE WORKPLACE

Section 5 of the 1980 proposed regulation required the employer to assess the likelihood of worker exposure to noise, listed the matters to be considered in making this assessment, and provided for the involvement of the joint health and safety committee with respect to the assessment. The main issue identified upon analysis of the comments was the role of the joint health and safety committee.

Role of the Joint Health and Safety Committee

The role of the joint health and safety committee in performing the assessment and designing the control program was questioned. B. F. Goodrich and the Canadian Chemical Producers' Association stated that establishment of a joint health and safety committee is inconsistent with section 8(2) of the Occupational Health and Safety Act. This interpretation is, however, incorrect.

Imperial Oil, the Ontario Petroleum Association, the Canadian Paint and Coatings Association, Canadian General Electric, and the Canadian Chemical Producers' Association would prefer that the joint health and safety committee did not have decision-making powers. They suggested that the employer should not be required to "consult" with the joint health and safety committee, but that the employer should only ask the joint health and safety committee to "review" the assessment and the control program. On the other hand, the OFL believes that the role of the joint health and safety committees has been limited to an advisory capacity and

that it should have greater decision-making powers. The Confederation of Canadian Unions believes that the employer should be required to consult with workers "on the floor" during the assessment, and that there should be a mechanism whereby workers can initiate an assessment.

After consideration of the comments from industry and labour, it was decided that no changes should be made with respect to the role of the joint health and safety committee and workers. An additional provision was, however, included to require the employer to put the assessment in writing and to give a copy of the assessment to each member of the joint health and safety committee.

Revision of the 1980 Proposed Regulation, Section 5 - Assessment of the Work Place

Section 5(1), which has become section 7(1) in the June, 1981 revision, required that the employer put the assessment in writing, and reads as follows:

> "7. (1) Every employer shall cause an assessment to be made in writing of the exposure or likelihood of exposure in a work place of a worker to noise."

Section 5(2), now revised and renumbered 7(2), includes specific mention of the methods to control exposure for greater clarity, and reads as follows:

> "7. (2) In causing the assessment to be made, the employer shall take into account such matters as,
>
> (a) the noise level;
>
> (b) the extent and potential extent of the exposure of a worker to noise; and,
>
> (c) the measures and procedures necessary to control such exposure by means of engineering controls and work practice controls."

Section 5(3) did not include specific mention of labour-management arrangements similar to a joint health and safety committee but conforming to section 8(2) of

the Act. Thus, the phrase "committee of like nature or the workers or their representatives who participate in an arrangement, program or system conforming to subsection 2 of section 8 of the Act as the case may be" was added. Section 5(3), 7(3)in the June, 1981 revision, reads as follows:

> "7. (3) In causing the assessment to be made, the employer shall consult thereon with the joint health and safety committee or the committee of like nature or the workers or their representatives who participate in an arrangement, program or system conforming to subsection 2 of section 8 of the Act as the case may be, and the committee or the workers or their representatives may make recommendations with respect to the assessment."

A new section 7(4), in the June, 1981 version was added which required the employer to supply each member of the joint health and safety committee with a copy of the assessment. Section 7(4) reads as follows:

> "7. (4) A copy of the assessment made by an employer shall be given by the employer to each member of the joint health and safety committee, or committee of like nature or to the workers or their representatives participating in an arrangement, program or system conforming to subsection 2 of section 8 of the Act."

Comments Received After the June 24, 1981 Meeting - Section on the Assessment of the Work Place

Algoma recommended "that an assessment be required in areas in excess of 85 dBA since no action is to be taken in areas below 85 dBA." The suggestion to insert the words "in excess of 85 dBA" in section 7 (1) was not accepted since it was felt that this would not afford the worker the level of protection intended. No other new issues were raised in the briefs received after the public meeting.

Revisions Made After the June 24, 1981 Meeting - Section on Assessment of the Work Place

The words "noise level" were replaced by "sound level" in section 7(2)(a), in the June, 1981 version and the words "and hygiene practices and facilities" were added in section 7(2)(c).

Other changes were made so that the wording in this regulation is consistent with that in the Lead Regulation, which was reviewed by legislative counsel, and in other designated substances regulations. Since section 6 in the June, 1981 revised regulation was deleted, section 7 in the June, 1981 revision was relocated to section 6 in the November, 1981 revised regulation and now reads as follows:

"6. (1) Every employer to whom this Regulation applies shall cause an assessment to be made in writing of the exposure or likelihood of exposure of a worker to noise in a work place.

(2) In causing the assessment to be made, the employer shall consider and take into account such matters as:

(a) sources of noise;

(b) the extent and potential extent of the exposure of a worker to noise; and

(c) the measures and procedures necessary to control such exposure by means of engineering controls, work practices and hygiene practices and facilities.

(3) In causing the assessment to be made, the employer shall consult thereon with the joint health and safety committee and the committee may make recommendations with respect to the assessment.

(4) A copy of the assessment made by an employer shall be given by the employer to each member of the joint health and safety committee."

As discussed in the section on exposure limits, a noise level - not a time-weighted average exposure - is used in determining engineering compliance requirements of the November, 1982 version of the proposed noise regulation. To emphasize this difference, expressions such as "exposure of a worker to noise" were changed to "sound levels of noise to which a worker is subjected or is likely to be subjected." In addition to this change in wording, section 6 of the November, 1981 version was renumbered as section 11 in the November, 1982 version and reads as follows:

"11. (1) Every employer to whom this Regulation applies shall cause an assessment to be made in writing of the sound levels of noise to which a worker is subjected or is likely to be subjected.

(2) In causing the assessment to be made, the employer shall consider and take into account such matters as,

(a) the sources of noise;

(b) the extent and potential extent to which a worker would be subjected to sound levels of noise; and

(c) the measures and procedures necessary to control the sound levels of noise by means of engineering controls, work practices and facilities.

(3) In causing the assessment to be made, the employer shall consult thereon with the joint health and safety committee and the committee may make recommendations with respect to the assessment.

(4) A copy of the assessment made by an employer shall be given by the employer to each member of the joint health and safety committee."

ESTABLISHMENT OF A NOISE CONTROL/HEARING CONSERVATION PROGRAM

The provisions to be included in a control program were outlined in section 6 of the 1980 proposed noise regulation. Several issues were raised by the respondents with respect to the provisions of this section, namely:

- the responsibility for maintaining medical records;
- the role of the joint health and safety committee; and
- auditing the effectiveness of a control program.

Responsibility for Maintaining Medical Records

Ford Canada and Canadian General Electric wanted clarification as to who would be responsible for maintaining the medical records - the employer or the physician. Section 6(3)(c) of the 1980 proposed regulation states that the employer is responsible for maintaining the worker's exposure records, and section 6(3)(e) that the medical records are to be maintained by the examining physician.

Role of the Joint Health And Safety Committee

The suggestions by Imperial Oil, the Ontario Petroleum Association, the Canadian Chemical Producers' Association and Canadian General Electric that the role of the joint health and safety committee should be limited to a review body and the contention by the Canadian Chemical Producers' Association that establishment of a joint health and safety committee is inconsistent with the Act have been discussed under section 5 of the 1980 proposed regulation.

No changes with respect to the role of the joint health and safety committee were made for the reasons discussed under section 5 of the 1980 version.

Auditing the Effectiveness of a Control Program

The Confederation of Canadian Unions wanted a mechanism to be established to audit the effectiveness of the control program. However, no change to the regulation was considered necessary as it is an ongoing function of the joint health and safety committee to audit the health and safety programs of a work place. Algoma Steel would prefer that the control program be audited regularly by the Ministry physicians. This is not feasible at this time, but guidance for the program will be provided in the Code for Medical Surveillance of Noise-Exposed Workers.

Additional Points Raised

Three briefs, including that of Ford Canada, stated that exposure records were useless and should not be required.

The Council of Ontario Contractors and the Construction Safety Association of Ontario requested control by procedure instead of monitoring, the latter to be

applicable at a Director's discretion only. The OFL stated audiometry should require worker consent; General Wire and Cable stated the opposite.

The Ontario Food Processors Association pointed out a problem with seasonal workers. They suggested that it would be an impractical task to provide medical examinations and audiometric testing for all short-term, transient employees. Somerville-Belkin asked that provision be made for small firms which would have difficulty complying. Some companies (Kelsey Hayes and Canada Alloy Castings) questioned the need for a physician to keep the audiometric records, suggesting that this be a duty of the employer or a qualified agency or technician. Gulf Canada and Du Pont suggest that provision for personal hearing protection be included in the control program.

Revision of the 1980 Proposed Regulation, Section 6 - Establishment of a Noise Control/Hearing Conservation Program

A number of changes have been made to section 6 which became section 8 in the June, 1981 revised regulation.

Section 8(1) of the June, 1981 version requires the development of a "hearing conservation program" where a worker is exposed to noise at a level of 85 dBA and where the health of a worker may be affected, and in any event where the duration of exposure is for 20 hours or more a week. Section 8(1) in the June, 1981 proposed regulation reads as follows:

> "8. (1) Where the assessment discloses that a worker is likely to be exposed to noise in excess of 85 dB(A) and the health of the worker may be affected thereby, and in any event over 20 hours in a work week, the employer shall put into effect and maintain measures and procedures to control the exposure of the worker to noise and shall incorporate the same into a hearing conservation program."

Section 8(2) of the June, 1981 version deals with the items to be included in the hearing conservation program. Hygiene practices and facilities, and hearing protection equipment have been added to section 8(2)(a), exposure records are still required as part of the program, and maintainance of audiometric testing records has been left under a physician's supervision to ensure confidentiality. The June, 1981 version of section 8(2) now reads as follows:

"8. (2) The hearing conservation program shall include provisions for,

(a) engineering controls, work practice controls, hygiene practices and facilities, and hearing protection equipment as required by sections 4 and 5;

(b) methods and procedures to monitor the exposure of the worker;

(c) maintenance by the employer of personal records of the exposure of the worker;

(d) medical examinations and clinical tests of the exposed worker; and

(e) maintenance by the physician who has examined the worker, or under whose direction the clinical tests have been performed, of records of medical examinations and clinical tests."

Section 6(4) outlined the requirement for the employer to consult with the joint health and safety committee in the development of a noise control program. This has been relocated to section 8(3) in the June, 1981 revised regulation and the wording now allows for alternate forms of health and safety committees. It reads as follows:

"8. (3) In developing the measures and procedures mentioned in subsection 1 and the hearing conservation program, the employer shall consult with the joint health and safety committee, the committee of like nature or the workers or their representatives, mentioned in subsection 3 of section 7, who may make recommendations with respect to the same."

Comments Received After the June 24, 1981 Meeting - Section on the Noise Control/Hearing Conservation Program

In response to comments from Du Pont, the words "sound level" were inserted after 85 dBA in section 8(1) so as to make clearer that the 85 dBA is a sound level

criterion, not sound exposure (L_{ex}) level.

Several respondents shared the same views about the term "clinical tests" and one indicated that

> "the term "clinical tests" in reference to hearing should be changed to "audiometric tests". Otherwise there is a district probability of misinterpretation or at least the use of only tuning fork tests as being deemed sufficient".

Revisions Made After the June 24, 1981 Meeting - Section on the Noise Control/Hearing Conservation Program

The term "audiometric tests" was added for clarity even though the codes clearly indicate that audiometric tests, and not tuning fork tests, are acceptable and are required in the hearing conservation program. The term "clinical tests" was retained so as not to preclude other tests that the physician may require.

Another concern expressed at the public meeting and in several briefs was the availability of physicians with expertise in occupational medicine. It was felt that the qualifications of the "physician", mentioned in section 8(2)(e) of the June, 1981 version and elsewhere, should be defined. Staff in the Occupational Health Branch contended that the system of physician referrals and the availability of courses in occupational medicine should enable all workers to obtain appropriate medical attention.

A few minor changes were made for clarity and to make the language consistent with that in the Lead Regulation. Since section 6 of the June, 1981 revised regulation was deleted, section 8 was relocated to section 7 in the November, 1981 revised regulation and reads as follows:

> "7. (1) Where the assessment discloses or would, if made in conformity with section 6, disclose that a worker is likely to be exposed to noise in excess of an 85 dBA sound level and that the health of the worker may be affected thereby, and in any event where the worker is exposed to noise in excess of an 85 dBA sound level for 20 hours or more in a work week, the employer shall develop, establish, put into effect and maintain measures and procedures to control the exposure of the

worker to noise and shall incorporate the same into a hearing conservation program.

(2) The hearing conservation program shall include provisions for,

(a) engineering controls, work practices and hygiene practices and facilities as required by sections 4 and 5;

(b) methods and procedures to monitor noise in the work place and the exposure of a worker thereto;

(c) personal records of the equivalent sound exposure level of the worker and of the sound levels and the times in which such sound levels were taken to be representative of the exposure of the worker to noise at the work place and used in calculating the equivalent sound exposure to be maintained by the employer;

(d) medical examinations and clinical tests including audiometric tests of a worker and;

(e) records of medical examinations and clinical tests of a worker to be maintained by the physician who has examined the worker or under whose direction the clinical tests have been performed.

(3) In developing the measures and procedures mentioned in subsection (1) and the hearing conservation program, the employer shall consult with the joint health and safety committee and the committee may make recommendations with respect to the same."

The action level for initiating a hearing conservation program was changed somewhat in order to clarify the intent of the clause "... exposed to noise in excess of 85 dBA sound level and that the health of the worker may be affected thereby." Furthermore, the time base in section 7(1) of the November, 1981 version was changed from "20 hours or more in a work week" to "four hours or more in a work day." The hearing conservation program now has provisions for the use of hearing protection equipment.

This section was relocated to section 12 in the November, 1982 version and reads as follows:

"12. (1) Where the assessment discloses or would, if made in conformity with section 11, disclose that the sound level of noise in a work place to which a worker is or is likely to be subjected to noise is,

(a) equal to or greater than a sound level of noise of 85 dBA for four hours or more in a work day, or

(b) equal to or greater than a sound level of noise of 90 dBA,

the employer shall develop, establish, put into effect and maintain a hearing conservation program.

(2) The hearing conservation program shall include provisions for,

(a) hearing protection equipment;

(b) methods and procedures to monitor noise in the work place to which a worker is subjected;

(c) records of the sound levels of noise and the times in which such sound levels were taken as being representative of the sound levels to which a worker is subjected at the work place to be maintained by the employer;

(d) medical examinations and clinical tests including audiometric tests of a worker;

(e) records of medical examinations and clinical tests of a worker to be maintained by the physician who has examined the worker or under whose direction the clinical tests have been performed;

(f) work practices and facilities; and

(g) engineering controls, as prescribed by section 5.

(3) In developing the hearing conservation program, the employer shall consult with the joint health and safety committee and the committee may make recommendations with respect to the same."

REQUIREMENT FOR REASSESSMENT

Section 7 of the 1980 proposed noise regulation required the employer to make a further assessment when a change in the work place might result in a significant difference in the exposure of workers to noise.

Several companies and trade associations (Chrysler, Ford Canada, Ontario Hydro, Ontario Petroleum Association, Dofasco, Imperial Oil, Gulf Canada, the Canadian Chemical Producers' Association, the Canadian Paint and Coatings Association, Dow, Society of the Plastics Industry, Stelco) suggested that further assessments should be carried out only if a change in the work place resulted in an increased worker exposure rather than a significant difference in worker exposure.

This suggestion was not adopted as it is felt that the effect of a change in the work place cannot be gauged without a reassessment. To clarify this section, however, the phrases "and develop, establish, put into effect and maintain a noise control program ... as a result of the change" and "to the further assessment . . . required by this section" were removed.

The Confederation of Canadian Unions believes that employers should be required to assess the impact of any work place changes on worker health before such changes are implemented. This suggestion was not considered practicable at this time.

Revision of the 1980 Proposed Regulation, Section 7 - Requirement For Reassessment

Section 7 becomes section 9 in the June, 1981 revised regulation and reads as follows:

"9. Where a change is made in a process, or in the methods and procedures, and the change could result in a significant difference in

the noise level, the employer shall cause a further assessment to be made forthwith and the provisions of sections 7 and 8 shall apply."

Comments Received After the June 24, 1981 Meeting - Section on the Reassessment Requirement

No new issues were raised in the briefs received after the public meetings.

Revisions Made After the June 24, 1981 Meeting - Section on the Reassessment Requirement

The phrase "in the noise level" was replaced by "in the sound level to which the worker is exposed", and the phrase "to the further assessment" was added at the end of the section. Since section 6 of the June, 1981 revised regulation was deleted, section 9 was relocated to section 8, and references to sections 7 and 8 therein were changed to sections 6 and 7, respectively.

Section 8 of the November, 1981 revised regulation now reads as follows:

"8. Where a change is made in the work place which could result in a significant difference in the sound level to which the worker may be exposed, the employer shall cause a further assessment to be made forthwith and the provisions of sections 6 and 7 shall apply to the further assessment."

In the November, 1982 proposed regulation, the above section was renumbered as section 13 and references to sections 6 and 7 were changed to 11 and 12, respectively, to take into account other changes in the regulation. Section 13 of the November, 1982 version now reads as follows:

"13. Where a change is made in the work place which could result in a significant difference in the sound level of noise to which the worker may be exposed, the employer shall cause a further assessment to be made forthwith and the provisions of sections 11 and 12 shall apply to the further assessment."

DISPUTES BETWEEN THE EMPLOYER AND THE JOINT HEALTH AND SAFETY COMMITTEE

Section 8 dealt with disputes arising between the employer and the joint health and safety committee with regard to an assessment or a noise control program. The section stated that in the event of a dispute "the employer or a member of the joint health and safety committee may notify an inspector ... who shall ... give a decision..."

Role of the Joint Health and Safety Committee

Several respondents (Imperial Oil, Stelco, Gulf Canada, Du Pont, Society of the Plastics Industry, the Canadian Chemical Producers' Association, Ontario Occupational Health Nurses Association, the Ontario Petroleum Association and Port Weller Dry Docks) believe that an individual member of a joint health and safety committee should not be permitted to notify an inspector. The main objection was that this could allow implementation of a program to be held up by one dissenting voice. These respondents recommended that the phrase "a member of" be deleted.

It is believed, however, that individual members should have the right to notify an inspector in case of disputes. This suggestion was therefore not adopted.

Role of the Inspector

Ford Canada, Inco, and Algoma Steel recommended that the inspector's decision be subject to an appeal procedure, if necessary. Algoma proposed that disputes be referred to a board of experts in occupational health and safety, but this suggestion was considered impracticable. An inspector's decision under the regulation may be appealed to a Director under section 32(5) of the Act.

Imperial Oil suggested that the inspector should not give a decision on disputes between the employer and the joint health and safety committee, but should issue an order. Legal counsel advised as follows:

"Orders can only be issued for contraventions of the Act and its regulations. Therefore, there is no statutory power to issue orders to resolve disputes as to the content of an assessment or a control program. The decision-making power of an inspector under section 8 is a mediation role. An inspector can issue orders for

contraventions of sections 4, 5 or 6, in those cases where a requirement imposed by the section is not complied with."

Revision of the 1980 Proposed Regulation, Section 8 - Disputes Between the Employer and the Joint Health and Safety Committee

Section 8, now section 10(1) of the June, 1981 revised regulation, was modified to provide for alternative forms of joint health and safety committees at different work places. The June, 1981 version of Section 10(1) read as follows:

> "10. (1) Where disputes arise between an employer and a joint health and safety committee, a committee of like nature or the workers or their representatives who participate in an arrangement, program or system conforming to subsection 2 of section 8 of the Act as to an assessment required under section 7 or 9 or as to the measures and procedures mentioned in subsection 1 of section 8 or the hearing conservation program or its provisions required under section 8 or 9, the employer, a member of the joint health and safety committee or the committee of like nature or the workers or their representatives may notify an inspector thereof who shall investigate and give a decision in writing to the employer, the committee, or the workers or their representatives."

A subsection was added in section 10 if the June, 1981 version to make it clear that nothing in subsection 1 affects the power of an inspector to issue an order for a contravention of a section of the noise regulation. Section 10(2) of the June, 1981 version of the regulation reads as follows:

> "10. (2) Nothing in subsection 1 applies to affect the power of an inspector to issue an order for a contravention of any section of this Regulation."

Comments Received after the June 24, 1981 Meeting - Section on Disputes Between the Employer and the Joint Health and Safety Committee

No new issues were raised in the briefs received.

Revisions made after the June, 1981 Meeting - Section on Disputes Between the Employer and the Joint Health and Safety Committee

The wording in this section was changed so as to conform with the wording in the Lead Regulation which was reviewed by legislative counsel. In particular, the provision for alternative forms of joint health and safety committees at different work places was deleted.

Section 9 of the November, 1981 revised regulation reads as follows:

> "9. (1) Where disputes arise between an employer and a joint health and safety committee, as to an assessment required under section 6 or 8 or as to the measures and procedures mentioned in subsection 7(1) or the hearing conservation program or its provisions required under section 7 or 8, the employer, a member of the joint health and safety committee or the committee may notify an inspector thereof who shall investigate and give a decision in writing to the employer, the member or the committee.
>
> (2) Nothing in subsection (1) applies so as to affect the power of an inspector to issue an order for a contravention of this Regulation."

As a result of the changes made in the exposure limit and in the wording of section 7(1) of the November, 1981 version, section 9 of the November, 1981 version was reworded. It was also renumbered as section 14 and reads as follows in the November, 1982 version:

> "14. (1) Where disputes arise between an employer and a joint health and safety committee, as to an assessment required under section 11 or 13 or as to the measures and procedures required to be included in the hearing conservation program or its provisions required under section 12 or 13, the employer, a member of the joint health and safety committee or the committee may notify an inspector thereof who shall investigate and give a decision in writing to the employer, the member or the committee.

(2) Nothing in subsection (1) applies so as to affect the power of an inspector ot issue an order for a contravention of this Regulation."

SUPPLYING COPIES OF THE CONTROL PROGRAM

Section 9 of the 1980 proposed regulation required the employer to give a copy of the noise control program to each member of the joint health and safety committee and to make it available to the workers concerned. Ontario Hydro and the Toronto Transit Commission objected to each member of the health and safety committee receiving a copy of the noise control program.

The Ontario Occupational Health Nurses Association suggested that copies of the program should be provided in languages other than English where necessary. This suggestion was adopted and a new subsection has been added requiring translation of the control program in work places where the majority of the workers are not English speaking.

The employer must now also inform every worker affected by the noise control program of its provisions.

Revision of the 1980 Proposed Regulation, Section 9 - Supplying Copies of the Control Program

Section 9, now subsection 11(1) of the June, 1981 version was modified to account for the different types of joint health and safety committees in existence. Section 11(1) of the June, 1981 version reads as follows:

"11. (1) A copy of the hearing conservation program put into effect by the employer shall be given by the employer to each member of the joint health and safety committee or committee of like nature and to the workers or their representatives participating in an arrangement, program or system conforming to subsection 2 of section 8 of the Act and the employer shall acquaint every worker affected by the hearing conservation program with its provisions."

A new section 11(2), was added requiring translation of the hearing conservation program. Section 11(2) reads as follows in the June, 1981 revised regulation:

"11. (1) A copy of the hearing conversation progam put into effect by the employer shall be made available by the employer in English and in the majority language of the work place."

Comments Received after the June 24, 1981 Meeting, Section 9 - Supplying Copies of the Control Program

No new issues were raised in the briefs received.

Revisions made after the June 24, 1981 Meeting - Section on Supplying Copies of the Control Program

Part of section 11(1) of the June, 1981 revised regulation was deleted ("or committee of like nature . . . section 8 of the Act") since section 1(g) defines joint health and safety committee. "A copy of" was inserted at the beginning of section 11(2). Since section 6 of the June, 1981 version was deleted, section 11 was relocated to section 10 of the November, 1981 revised regulation and reads as follows:

"10. (1) A copy of the hearing conservation program put into effect by the employer shall be given by the employer to each member of the joint health and safety committee and the employer shall acquaint every worker affected by the hearing conservation program with its provisions.

(2) A copy of the hearing conservation program put into effect by the employer shall be made available by the employer in English and in the majority language of the work place."

The wording in the above section remains the same in the November, 1982 version but the section was renumbered to section 15.

USE OF PERSONAL PROTECTIVE EQUIPMENT

Section 10 in the 1980 published regulation dealt with the use of personal hearing protection and the circumstances under which personal hearing protection would be permitted. It also required that the personal protective equipment provided be in accordance with the Canadian Standards Association Standard Z94.2-1974 and

that workers be provided with training in the use of the equipment.

Section 10 was perhaps the most controversial of all the sections in the proposed regulation because of:

- the severe restrictions on the use of personal hearing protection even under certain circumstances where its use would be desirable; and

- the role assigned to inspectors with respect to authorizing the use of personal hearing protection.

Use of Personal Protective Equipment as a Control Measure

Thirty-seven industry organizations stressed that the regulation should provide for greater flexibility in the use of personal hearing protection as a control measure. Many respondents felt that use of personal hearing protection is often more economical or practicable than immediate implementation of other types of controls.

The position of a number of respondents (Imperial Oil, General Motors, B.F. Goodrich, the Canadian Chemical Producers' Association and the Non-Ferrous Founders' Society) was that the employer alone should determine when personal protective equipment is to be used. A number of respondents (Imperial Oil, the Ontario Petroleum Association, Ontario Hydro, Gulf Canada, the Canadian Chemical Producers' Association, General Motors and Stelco) suggested that a combination of engineering controls and personal protective equipment be allowed. Chrysler recommended that section 10 be completely removed from the regulation.

Some briefs seemed to imply that personal hearing protection should be permitted to be the primary means of control. For example, Chrysler, Stelco, General Motors and the Construction Safety Association of Ontario recommended that the time-weighted average exposure limit be met by requiring the worker to use personal hearing protection and that the phrase "otherwise than by requiring a worker to wear and use personal hearing protection" be removed from section 4(1). One implication of such a change is that the work place could have a high noise level but if all workers wore personal hearing protection which reduced the noise level to 85 dBA, the employer would have met the requirements of the

regulation. On the other hand, the OFL and the United Steelworkers argued emphatically that personal hearing protection should not be a substitute for other controls.

Greater reliance on the use of personal protective equipment as a control measure was carefully considered and evaluated. While it is recognized that this may be an economical means of controlling noise exposure, the fact remains that engineering controls are far more effective for a number of reasons:

- personal hearing protectors frequently offer much less protection than claimed, due to variations in fitting among the users;

- compliance with a personal hearing protection program is often poor; and

- training, use and maintenance of personal protective equipment requires ongoing programs for the users and such programs often lose effectiveness over time.

Section 10 in the 1980 published regulation has been relocated to section 5 in the June, 1981 version. The wording in the new section 5 is designed to provide for control of the use of personal protective equipment where viable engineering options are available and, at the same time, to recognize where engineering controls are not practicable, that personal protective equipment may be used.

The term "not practical" has been added to section 5(1)(a)(ii) since engineering controls may be totally impractical in certain situations. The phrase "frequency of exposure" was also added to section 5(1)(a)(ii) as some industries would have only intermittent occupational exposure to noise. The phrase "nature of process, operation, ..." was also added. The test of practicality will be applied on a case by case basis with respect to the particular characteristics of the industry in question, the state of development of its technology and other related matters.

The Mines Accident Prevention Association stated that section 10 is in conflict with section 17(1)(b) of the Act, but this interpretation is believed to be incorrect.

Role of the Inspector in Authorizing the Use of Personal Hearing Protection

Several respondents seem to have interpreted section 10 to mean that workers would not be permitted to use personal protective equipment even in emergencies, without the approval of an inspector.

The intent of section 10 was not to prohibit the use of personal protective equipment during emergencies. To clarify this, a new section, 5(1)(b), has been added which specifically allows their use in emergencies.

A second criticism (Ontario Hydro, Gulf Canada, the Ontario Petroleum Association, the Canadian Paint and Coatings Association, the Environmental Law Association) was that the section as it was written might place a difficult administrative burden on inspectors. The Environmental Law Association suggested that the employer might better refer this decision to a Director. Imperial Oil stated that the decision to allow use of personal hearing protection should not rest with an inspector. Algoma Steel suggested that the phrase "to the satisfaction of an inspector" should be deleted.

In view of these criticisms, the requirement for approval by an inspector was removed. It was acknowledged that such a requirement would be difficult to administer and would place an onerous burden on the inspectorate.

Revision of the 1980 Proposed Regulation, Section 10 - Use of Personal Protective Equipment

Section 10 was relocated to section 5 in the revised regulation. The wording of section 10(1) was revised to provide for the rigorous control of the use of personal protective equipment where viable engineering options are available and, at the same time, recognize that where engineering controls are not practicable, personal hearing protection may be used. A new section 5(1)(b) was added which specifically allows use in emergencies. Section 5(1) in the June, 1981 revised regulation reads as follows:

> "5. (1) Every employer shall ensure compliance with section 4 without requiring a worker to use hearing protection equipment except,

(a) where the engineering controls and work practice controls required to control the exposure of a worker to noise,

(i) do not exist or are not available,

(ii) are not reasonable or are not practical for the length of time or frequency of exposure or the nature of the process, operation or work, or,

(iii) are not effective because of a temporary breakdown of equipment, or

(b) in an emergency."

Standards for personal hearing protection are now incorporated in the Code for Hearing Protection of Noise-Exposed Workers and this is referenced in section 5(2) of the June, 1981 draft regulation which reads as follows:

"5. (2) Where hearing protection equipment is provided by an employer and used by a worker the hearing protection equipment shall be appropriate in the circumstances for the type and the sound levels of noise to which a worker is exposed and shall meet, or exceed, the requirements set out in the Code for Hearing Protection of Noise-Exposed Workers dated the 23rd day of November, 1981, and issued by the Ministry."

Requirements for training of workers in the care and use of hearing protection equipment are contained in section 5(3) of the June, 1981 version which reads as follows:

"5. (3) The employer shall provide training and instruction to a worker in the proper care and use of hearing protection equipment provided by the employer."

Comments Received After the June 24, 1981 Meeting - Section on the Use of Personal Protective Equipment

No new issues relating to section 10 of the proposed regulation were raised in the comments received since the public meeting.

Revisions Made after the June 24, 1981 Meeting - Section on the Use of Personal Protective Equipment

The wording was modified so the format in this regulation is the same as that in the Lead Regulation and other designated substances regulations, and section 5 in the November, 1981 revised regulation reads as follows:

"5. (1) Where the strict duty imposed by subsection 4(1) or 4(2) cannot be complied with because,

(a) an emergency exists; or

(b) the measures and procedures necessary to control the exposure of a worker to noise,

(i) do not exist or are not available,

(ii) are not reasonable or are not practical for the length of time or frequency of exposure or the nature of the process, operation or work, or

(iii) are not effective because of a temporary breakdown of equipment,

the employer shall provide a worker with hearing protection equipment which shall be used by the worker.

(2) Where hearing protection equipment is provided by an employer and used by a worker, the hearing protection equipment shall be appropriate in the circumstances for the type and the levels of noise to which a worker is exposed, and, subject to section 17, shall meet the requirements set out in the Code for Hearing Protection of Noise-

Exposed Workers dated the 23rd day of November, 1981, and issued by the Ministry.

(3) The employer shall provide training and instruction to a worker in the proper care and use of hearing protection equipment provided by the employer."

Because of the changes made in the section concerning the noise exposure limit, references to other sections and the Code for Hearing Protection of Noise-Exposed Workers mentioned in Section 5 of the November 1981 version were changed. The section was reworded to reflect these changes in the kind of exposure limit (i.e. noise level versus exposure or dose). In subsection 5(1)(b) of the November, 1981 version, the phrase "measures and procedures necessary to control the exposure of a worker to noise was changed to "to control the sound levels". In clause 5(1)(a)(b)(iii), the phrase "temporary breakdown of equipment" was changed to "temporary breakdown of a measure or procedure necessary to control the sound levels."

In addition to the provisions for hearing protection equipment stipulated in subsection (5)(1) (November, 1981 version), the employer is now required, in the November, 1982 version, to provide such equipment when the sound level in a workplace is 85dBA or more for four hours or more during a work day (see section 8 in the November, 1982 proposed regulation), or if the noise level is 90dBA or greater (see sections 12(1) and (2) of the 1982 version). A new subsection, 10(3), in the November, 1982 version requires that warning signs be posted at approaches to areas where the sound level is equal to or greater than 85dBA for four hours or more during a work day.

The November, 1982 version of section 12 was discussed earlier under the heading "Establishment of a Noise Control/Hearing Conservation Program" (section 6 of the 1980 proposed regulation). Of the other sections dealing with hearing protection equipment, subsections 5(1), 5(2) and 5(3) of the November, 1981 version were rewarded somewhat and renumbered 6, 10(1) and 10(2), respectively in the November, 1982 version and sections 8 and 10(3) are new. Sections 6,8 and 10 in the November, 1982 version read as follows:

"6. Where the strict duty imposed by section 5 cannot be complied with because,

(a) an emergency exists, or

(b) the measures and procedures necessary to control the sound levels,

(i) do not exist or are not available or are not available,

(ii) are not reasonable or practical for the length of time or frequency of exposure or the nature of the process, operation or work, or

(iii) are not effective because of a temporary breakdown of a measure or procedure necessary to control the sound levels,

the employer shall provide a worker with hearing protection equiment which shall be used by the worker."

"8. Where the sound level of noise in a workplace to which a worker is or would be subjected is equal to or greater than 85 dBA for four hours or more in a work day, the employer shall provide hearing protection equipment to the worker and the equipmant shall be used by the worker."

"10. (1) Hearing protection equipment shall be appropriate in the circumstances for the type and levels of noise to which a worker would be subjected and, subject to section 21, shall meet the requirements set out in the Code for Hearing Protection of Noise-Exposed Workers dated the 5th day of November, 1982, and issued by the Ministry.

(2) The employer shall provide training and instruction to a worker in the proper care and use of hearing protection equipment provided by the employer.

(3) Clearly visible warning signs shall be posted at the approaches to an area where the sound level is equal to or greater than 85 dBA for four or more hours in a work day warning that hearing protection equipment shall be worn in the area."

Medical Surveillance Program

Section 11 in the 1980 proposed regulation of the proposed regulation required that medical examinations and audiometric tests be under the supervision of a physician and set out the requirements for preplacement and periodic medical examinations and audiometric tests.

The consensus among respondents was that a physician is not required to conduct or supervise testing. Eleven briefs made this point. In addition, it was pointed out that there would not be enough qualified physicians to do all the required testing. Eighteen briefs stated the opinion that a medical examination is not necessary for hearing conservation, including those from Ford, Chrysler, Ministry of Transportation and Communications, Inco, Algoma and the Industrial Accident Prevention Association. The cost of medical examinations and of having physicians involved with audiometry was cited as a major burden. Fourteen briefs asked for standards of competence for audiometric technicians; these were not mentioned in the regulation.

Three briefs asked for provisions for small employer/small town situations. Reid Milling, the Mines Accident Prevention Association of Ontario, the Forest Products Accident Prevention Association, and the Ontario Mining Association suggested that the section should be deleted as not contributing to hearing conservation.

Revision of the 1980 Proposed Regulation, Section 11 - Medical Surveillance Program

Section 11 of the 1980 proposed regulation was relocated to section 14 of the June, 1981 version. A new section, 14(1), states that medical examinations and audiometric tests are to be carried out at the employer's expense. Section 14(1) in the June, 1981 revised regulation reads as follows:

> "14. (1) A worker shall undergo the medical examinations and clinical tests as the hearing conservation program provides at the expense of the employer."

Requirements for pre-employment, pre-placement and periodic medical examinations and clinical tests were set out as follows in section 14(2) of the June, 1981 revised regulation.

"14. (2) The medical examinations and clinical tests required to be provided in a hearing conservation program shall make provisions for:

(a) pre-employment and pre-placement medical examinations to include,

(i) a medical history,

(ii) an otoscopic examination,

(iii) audiometric tests, and

(b) periodic medical examinations and audiometric tests consisting of the items prescribed in clause a."

Standards for audiometric testing are included in the Code for Audiometry of Noise-Exposed Workers referenced in section 14(3) of the June, 1981 regulation which reads as follows:

"14. (3) Subject to section 18, the audiometric tests of a worker shall be determined in accordance with the Code for Audiometry dated the 23rd day of June, 1981 and issued by the Ministry."

The role of the physician and the scope of the required examinations are outlined in a new Code for Medical Surveillance of Noise-Exposed Workers referenced in section 14(4) of the June, 1981 regulation as follows:

"14. (4) The medical history and otoscopic examination shall meet the provisions of the Code for Medical Surveillance dated the 23rd day of June, 1981 and issued by the Ministry."

Comments Received after the June 24, 1981 Meeting - Section 11 on the Medical Surveillance Program

One respondent commented that the use of the term "pre-employment ... medical examinations" might be in conflict with current and proposed human rights legislation at the federal and provincial levels.

Furthermore, in contrast to the control programs for the other designated substances, periodic medical examinations are not absolutely necessary for the purposes of the hearing conservation program. However, medical examinations are necessary when a worker has confirmed, significant hearing deterioration that would be detected during periodic audiometric testing.

Revisions Made after the June 24, 1981 Meeting - Section on the Medical Surveillance Program

To emphasize the importance of audiometry in the hearing conservation program, the codes, referred to in sections 14(3) of the June, 1981 proposed regulation and 14(4), were changed so that,

(a) audiometric testing and history of noise exposure will be required on a periodic basis, at least biennially or more often if indicated medically, and

(b) routine medical examinations will be required of noise-exposed workers only when there is a confirmed, significant hearing loss as defined in the codes.

Section 14(2) of the June, 1981 version was deleted. This deletion eliminates possible problems arising from human rights legislation but does not affect the intent of the noise regulation to minimize the effects of occupational noise on hearing.

In section 14(4) of the June, 1981 version, "medical history and otoscopic examination" was replaced by "medical examinations and clinical tests". The Code for Medical Surveillance of Noise-Exposed Workers specifies the requirements for otoscopic examinations under the section "Medical Examinations". Other word changes were made to make the wording in this

regulation conform to that in the Lead Regulation, which has been reviewed by legislative counsel, and the other designated substances regulations. Since section 6 of the June, 1981 revised regulation was deleted, section 14 was relocated to section 13 of the November, 1981 revised regulation and references to other sections therein were renumbered appropriately.

Section 13 in the November, 1981 revised regulation reads as follows:

"13. (1) A worker shall, at the expense of the employer, undergo the medical examinations and clinical tests required under the hearing conservation program.

(2) Subject to section 17, the medical examinations and clinical tests required under the hearing conservation program shall meet the provisions of the Code for Medical Surveillance of Noise-Exposed Workers dated the 23rd day of November, 1981, and issued by the Ministry.

(3) Subject to section 17, the audiometric tests of a worker shall be determined in accordance with the Code for Audiometry of Noise-Exposed Workers dated the 23rd day of November, 1981, and issued by the Ministry."

The wording of the above section was not changed in the November, 1982 proposed regulation but the section was renumbered section 17 and reference to section 17 in the above section was changed to section 21 in the 1982 version. The codes referred to in subsections (2) and (3) were modified and are now dated November 5, 1982. Section 17 now reads as follows:

"17. (1) A worker shall, at the expense of the employer, undergo the medical examinations and clinical tests required under the hearing conservation program.

(2) Subject to section 21, the medical examinations and clinical tests required under the hearing conservation program shall meet the provisions of the Code for Medical Surveillance of Noise-Exposed Workers dated the 5th day of November, 1982, and issued by the Ministry.

(3) Subject to section 21, the audiometric tests of a worker shall be determined in accordance with the Code for Audiometry of Noise-Exposed Workers dated the 5th day of November, 1982 and issued by the Ministry."

REPORTING OF MEDICAL FINDINGS AND ACCESS TO MEDICAL INFORMATION

A substantial number of comments were received on section 12 of the 1980 proposed regulation which contained provisions dealing with the reporting of medical findings and access to medical information. The section, as published, placed a duty on physicians to submit a report, on finding that a worker's hearing loss exceeded specified levels, to the worker, the employer, the Chief Physician, Occupational Health Medical Service and, with the worker's consent, to the worker's own physican. Furthermore, it specified that the worker ,or his authorized agent, had the right to receive reports on the results of medical examinations and tests upon request. The response of the public to the provisions of this section raised a number of issues with respect to the criteria for reporting, personal privacy and the reporting of medical findings. These issues are discussed below under four main headings:

- hearing loss requiring reporting to the Ministry;
- access to medical findings by workers;
- access to medical findings by employers; and
- access to medical findings by the worker's authorized agent.

Reporting Criteria

The regulation required reporting of the test results to the worker, the employer, the Ministry and, with the worker's consent, the worker's physician, if the worker's hearing threshold was greater than 25 dB in either ear averaged over four test frequencies or had shifted from the previous test by 10 dB at any test frequency in either ear. Thirty-three briefs from physicians, safety associations, companies and trade associations stated that a reporting criterion of 10 dB shift is much too sensitive (since the precision of measurement is only ±5 dB, and hearing is

temporarily affected by colds, fatigue, and other factors). Sixteen preferred 15 dB and 3 wanted 20 dB. These were considered more likely to indicate a true change in hearing acuity.

Other possible options considered for this referral criterion were:

(a) 10 dB at 3, 4 and 6 kHz (this concentrates on noise-induced hearing loss and reduces the spurious referral problem due to low frequency measurement errors);

(b) 15 dB at any frequency (common practice in many audiometric programs);

(c) 15 dB at 3, 4 and 6 kHz (less spurious referrals than any other criterion).

One physician (Pearsall) wanted 25 dB in the better ear (rather than in either ear) as the baseline referral criterion. Several briefs stated that medical follow-up should be defined more clearly (Du Pont, Canadian Hearing Society, Ontario Speech and Hearing Association), and one requested that "impaired" be defined. In the June, 1981 revised regulation these provisions were excluded and are now addressed in the Code for Audiometry of Nose-Exposed Workers and the Code for Medical Surveillance of Noise-Exposed Workers referred to in sections 14(3) and 14(4), respectively. According to the latter code (see Appendix Nb for the latest version), workers with a confirmed hearing loss of 25 dB average at 0.5, 1,2, and 3 kHz in both ears should be referred for assessment by the Workmen's Compensation Board.

Access to Medical Findings by Workers

Some respondents were concerned about the manner and extent to which workers should be advised of the results of their medical examinations and tests. The Mines and Accident Prevention Association wanted section 12(2) removed from the regulation. Inco recommended that the physician have the right to refuse release of information whereas the Confederation of Canadian Unions wanted the physician to be required to release all information to the worker.

In the June, 1981 revised regulation the worker's right to receive the results of his medical examinations and tests has been upheld by the provisions of section 17(3), in order to protect the physician from any charges of violating confidentiality. A requirement has been added, as suggested by some respondents (Gulf Canada and Imperial Oil), that the worker request these results in writing.

Access to Medical Findings by Employers

The section as drafted would not permit employers to review the medical records of workers or the results of tests on workers. The section was so drafted in order to protect the privacy of workers. The United Steelworkers of America, the Confederation of Canadian Unions and the Ontario Occupational Health Nurses Association supported the section as published for the protection of privacy. However, some industry respondents stressed that, in order to properly protect the health of their workers the employer must receive all results of tests and have access to the medical records of workers.

It was decided that allowing an employer to have access to a worker's records and medical findings would violate medical confidentiality. However, since an employer must, of necessity, be informed of a worker's susceptibility to hearing loss, the revised section requires the examining physician to report whether a worker is "fit, fit with limitations, or unfit" to work.

Access to Medical Findings by the Worker's Authorized Agent

The provisons in section 12(2) and section 13(4) of the 1980 version, with respect to the release of the results of medical examinations and tests to a worker's authorized agent, caused some controversy because of a misunderstanding of the term "authorized agent".

Inco and Canadian General Electric stated that these sections were inconsistent with section 34(1)(d) of the Occupational Health and Safety Act and the Health Disciplines Act, R.S.O. 1980, c. 196. The Ontario Occupational Health Nurses Association said that these sections "challenge the concept of medical confidentiality". Many respondents were concerned that inclusion of the phrase "or his authorized agent" would allow a third party, such as a union representative, the right to obtain a worker's medical records without the worker's knowledge or consent.

Legal counsel advised that under the Health Disciplines Act a patient or "his authorized agent" may request reports of medical examinations. The term "authorized agent" was intended to mean a person duly authorized by a worker to receive reports of medical examinations.

Several ways of dealing with this potential problem were suggested by the respondents. The Occupational Health Nurses Association requested that "authorized agent" be specifically defined. Several others (Imperial Oil, General Motors, B.F. Goodrich, Chrysler, the Amercian Industrial Hygiene Association, the Ontario Petroleum Association, the Canadian Chemical Producers' Association, Gulf Canada, the Occupational Health Nurses' Association, Port Weller Dry Docks) suggested that the results only be given to the worker's authorized agent, if so instructed in writing by the worker. Ford Canada, the Mines Accident Prevention Association, and the Canadian Battery Manufacturer's Association suggested that the results should be given to an authorized agent only upon the worker's request and to an agent specifically named by the worker. Others (Dofasco, the Canadian Manufacturers' Association, the Canadian Chemical Producers' Association and the Mines Accident Prevention Association) recommended that the reference to the worker's authorized agent should be deleted.

After careful consideration of the many suggestions to deal with this problem, the term "authorized agent" was deleted from sections 12(2) and 13(4) to avoid further misunderstanding.

Revision of the 1980 Proposed Regulation, Section 12 - Reporting of Medical Findings and Access to Medical Information

Section 12 of the 1980 proposed regulation was relocated to section 17 in the June, 1981 revised regulation. Section 17 deals specifically with the requirements a physician must follow when reporting his medical findings to another party.

The provisions of section 12(1) have been incorporated into sections 17(1) and 17(4) of the revised regulation. The requirement that the physician report his recommendations regarding the worker's fitness to work to the employer and to the worker is now contained in section 17(1) of the June, 1981 proposed regulation and reads as follows:

"17. (1) The physician conducting the medical examination or clinical tests or under whose supervision the examination or tests are made shall advise the employer and the worker whether the worker is fit, or because of a condition resulting from exposure to noise is fit with limitations or unfit without giving or disclosing to the employer the records or results of the examination or tests, and in advising that the worker is fit with limitations, or unfit, the physician shall be governed by the provisions of the Code for Medical Surveillance for Noise."

Section 17(4) requires the physician to report to the Ministry when a worker is deemed fit with limitations or unfit. It was thought to be needlessly burdensome to require employers to notify the Ministry for every worker who is deemed to be "fit". Section 17(4) of the June 24, 1981 regulation is worded as follows:

"17. (4) Where the physician advises the employer that a worker, because of a condition resulting from exposure to noise, is fit with limitations or is unfit the physician shall forthwith communicate such advice to the Chief Physician, Occupational Health Medical Service, of the Ministry."

Section 12(2), combined with section 13(4) of the 1980 regulation, was relocated to section 17(3) in the June, 1981 revised regulation (also see discussion under section 13(4)). The most important changes are the requirement that the worker request his medical records and the results of audiometric tests and physical examinations from the physician in writing, and the removal of the phrase "or his authorized agent". Section 17(3) in the June, 1981 proposed regulation reads as follows:

"17. (3) Copies of the exposure records and the records and results of medical examinations and clinical tests of a worker shall be given to the worker or his physician by the physician conducting the examinations or tests upon the request in writing of the worker or, in the case of a deceased worker, of his next of kin, and any authorization of another person by the worker or his next of kin to obtain and receive such copies is of no effect."

A new section 17(2) was added relating to the entitlement of a worker to compensation for loss of earnings resulting from removal from noise exposure. The new section in the June, 1981 version reads as follows:

"17. (2) Where a worker is removed from exposure to noise because a physical examination or clinical test discloses that the worker may have or has a condition resulting from noise and suffers loss of earnings occasioned thereby, the worker is entitled to compensation for the loss in the manner and to the extent provided by the Workmen's Compensation Act."

Comments Received after the June, 1981 Meeting - Section on Reporting of Medical Findings and Access to Medical Information

No new issues were raised in the briefs received.

Revisions Made after the June, 1981 Meeting - Section on Reporting of Medical Findings and Access to Medical Information

Several minor changes in wording were made; for example, "unfit" was expanded to "unfit for work in noise" and "referred to in section 13(2)" was added at the end of section 17(1) of the June, 1981 revised regulation. A new subsection 3 was added and the following subsections, previously 3 and 4, were renumbered 4 and 5, respectively. These changes were made so that the wording in this regulation would conform with that in the Lead Regulation, as reviewed by legislative counsel, and in the other revised designated substances regulations. Since section 6 of the June 1981 revised regulation was deleted, section 17 in the June 1981 revised regulation was relocated to section 16 of the November, 1981 revised regulation and reads as follows:

"16. (1) The physician conducting the medical examination or clinical tests or under whose supervision the examination or tests are made shall advise the employer, who shall act thereon, and the worker whether the worker is fit, or because of a condition resulting from exposure to noise is fit with limitations or unfit for work in noise without giving or disclosing to the employer the records or results of the examination or tests, and in advising that the worker is fit with limitations or unfit, the physician shall be governed by the provisions of the Code for Medical Surveillance of Noise-Exposed Workers referred to in section 13(2).

(2) Where a worker is removed from exposure to noise because a medical examination or clinical tests disclose that the worker may have or has a condition resulting from exposure to noise and suffers loss of earnings occasioned thereby, the worker is entitled to compensation for the loss in the manner and to the extent provided by the Workmen's Compensation Act.

(3) Upon advising the employer and the worker that a worker is fit with limitations or unfit for work in noise the physician shall advise in writing upon a confidential basis the joint health and safety committee thereof and in giving such advice shall indicate his opinion as to the interpretation to be placed thereon.

(4) Copies of the exposure records and the records and results of medical examinations and clinical tests of a worker shall be given by the physician conducting the examinations or tests,

(a) to the worker or his physician upon the request in writing of the worker; and

(b) in the case of a deceased worker, to the next of kin or personal representative of the worker, upon the request in writing of such next of kin or personal representative,

and any authorization of another person by the worker, his next of kin or personal representative is of no effect.

(5) Where the physician advises the employer that a worker, because of a condition resulting from exposure to noise, is fit with limitations or is unfit for work in noise, the physician shall forthwith communicate such advice to the Chief Physician, Occupational Health Medical Service of the Ministry."

In the November, 1982 Version the wording of section 16 above remains the same but has been renumbered as section 20. Reference to subsection 13(2) in subsection 16(1) of the November, 1981 version was also renumbered subsection 17(2) in subsection 20(1). Section 20 of the November, 1982 proposed noise regulation reads as follows:

"20. (1) The physician conducting the medical examiniation or clinical tests or under whose supervision the examination or tests are made shall advise the employer, who shall act thereon, and the worker whether the worker is fit, or, because of a condition resulting from exposure to noise, is fit with limitations or unfit for work in noise without giving or disclosing to the employer the records or results of the examination or test, and in advising that the worker is fit with limitations or unfit, the physician shall be governed by the provisions of the Code for Medical Surveillance of Noise-Exposed Workers referred to in subsection 17(2).

(2) Where a worker is removed from exposure to noise because a medical examination or clinical tests disclose that the worker may have or has a condition resulting from exposure to noise and suffers loss of earnings occasioned thereby, the worker is entitled to compensation for the loss in the manner and to the extent provided by the Workmen's Compensation Act.

(3) Upon advising the employer and the worker that a worker is fit with limitations or unfit for work in noise the physician shall advise in writing upon a confidential basis the joint health and safety committee thereof and in giving such advice shall indicate his opinion as to the interpretation to be placed thereon.

(4) Copies of the exposure records and the records and results of medical examinations and clinical tests of a worker shall be given by the physician conducting the examinations or tests,

(a) to the worker or his physician upon the request in writing of the worker; and

(b) in the case of a deceased worker, to the next of kin or personal representative of the worker, upon the request in writing of such next of kin or personal representative,

and any authorization of another person by the worker, his next of kin or personal representative is of no effect.

(5) Where the physician advises the employer that a worker, because of a condition resulting from exposure to noise, is fit with limitations or is unfit for work in noise, the physician shall forthwith communicate such advice to the Chief Physician, Occupational Health Medical Service of the Ministry."

RECORD KEEPING

Section 13 of the 1980 proposed regulation outlined the requirements for record-keeping. The employer had to provide a copy of the worker's personal exposure record to the examining physician. The length of time the worker's medical record had to be kept (20 to 40 years) was stipulated as well as the procedure to be taken when the physician was no longer able or willing to keep the records. Section 13 further stated that the results of the medical examinations and tests and the personal exposure records of the worker were to be made available to the worker or his authorized agent.

Four main issues were identified upon analysis of the comments, namely:

- access to the worker's personal exposure records;
- length of storage period for medical records;
- responsibility for storing the medical records; and
- the access of the worker's authorized agent to the worker's exposure and medical records.

Subsections of section 13 were relocated to different sections so that related material would be together. The following table summarizes the relocation of the subsections of section 13 into other sections; the changes made in these subsections are discussed below.

KEY TO SUBSECTIONS OF SECTION 13 AS TO WHERE THEY APPEAR IN THE REVISED NOISE REGULATION

Subject	Section in Published Regulation (August, 1980)	Section in June, 1981 Revised Regulation	Section in August, 1981 Revised Regulation	Section in Nov., 1982 Revised Regulation
Workers' Exposure Records	13(1);16	15	14	18
Maintaining of Medical Records	13(2); 13(3)	16(1); 16(2)	15(1); 15(2)	19(1);19(2)
Provision of Medical Reports to Workers	12(2); 13(4)	17(3)	16(4)	20(4)

Access to the Worker's Personal Exposure Records

B. F. Goodrich, Chrysler and General Motors felt that the worker's personal exposure records should be made available to the examining physician only upon a request in writing. Du Pont recommended that only the company physician should receive copies of the personal exposure records. Ontario Hydro stated that it would be unreasonable for a large corporation to send out exposure records to the personal physicians of workers.

In order to be properly informed as to the exposure of a worker, the employer must provide the examining physician with a copy of the worker's personal exposure record. For this reason section 13(1) has not been signficantly changed. The word "personal" has been deleted, because it implied that only personal noise monitoring should be undertaken.

Revision of the 1980 Proposed Regulation, Section 13(1) - Worker's Exposure Records

Section 15 of the June, 1981 revised regulation deals entirely with the worker's exposure records. Section 13(1) of the 1980 version has been relocated to section 15(2) of the June, 1981 revised regulation and reads as follows:

> "15. (2) The employer shall provide a copy of the records of the exposures of the worker to noise to the physician who examines the worker and under whose supervision the clinical tests of the worker are performed."

Comments Received after the June, 1981 Meeting - Section on the Worker's Exposure Records

Petrosar recommended that worker sound exposure "records be made available to the examining physician when requested, but not necessarily kept by him". The only change to this section was that it was relocated to section 14(2) in the November, 1981 revised regulation and reads as follows:

> "14. (2) The employer shall provide a copy of the records of the exposures of the worker to noise as provided by the hearing conservation program to the physician who examines the worker and under whose supervision the clinical tests of the worker are performed."

In the November, 1982 version the phrase "sound levels to which a worker is subjected" was substituted in place of "exposures of the worker to noise". This change was made following the change in the exposure limit discussed earlier. Section 14(2) of the November, 1981 version was renumbered as section 18(2) in the November, 1982 version and reads as follows:

> "18. (2) The employer shall provide a copy of the records of the sound levels to which a worker is subjected as provided by the hearing conservation program to the physician who examines the worker and under whose supervision the clinical tests of the worker are performed".

The Records Retention Period

Canada Alloy Castings and the Mines Accident Prevention Association stated that medical records need not be stored as long as was stipulated in the regulation. In contrast, Ontario Hydro stated that the storage period was "insufficient to meet the needs of any effective epidemiological studies".

Revision of the 1980 Proposed Regulation, Section 13(2) - Records Retention Period

Section 16 of the June, 1981 revised regulation deals entirely with the keeping of medical records. Section 13(2) of the 1980 version has been relocated to section

16(1) of the June, 1981 revised regulation and reads as follows:

> "16. (1) The records of medical examinations and clinical tests of a worker obtained and made under this Regulation and of the exposures of the worker to noise furnished by the employer under subsection 2 of section 15 shall be kept in a secure place by the physician who has conducted the examinations and tests or under whose supervision the examinations and tests have been made for,
>
> (a) a period of forty years from the time such records were first made, or
>
> (b) a period of twenty years from the time the last of such records were made,
>
> whichever is the longer."

Comments Received after the June 24, 1981 Meeting - Section on the Records Retention Period

Stelco suggested that "it is more practical to have employee records be kept under the authority and direction of the medical director of a clinic rather than a fragmented responsibility under the direction of each examining physician". This request probably reflects the corporate structure of Stelco and may not be realistic to apply to the majority of companies. Many respondents suggested that "audiometric tests" be mentioned explicitly.

Revison Made after the June 24, 1981 Meeting - Section on the Records Retention Period

The term "audiometric tests" was included. Because of the deletion of section 6, this section 16(1) in the June, 1981 revised regulation was relocated to section 15(1) in the November, 1981 revision and reference to "subsection 2 of section 15" was changed to "subsection 14(2)". This wording is consistent with that in the Lead Regulation, and section 15(1) of the November, 1981 revised regulation reads as follows:

"15. (1) The records of medical examinations and clinical tests of a worker obtained and made under this Regulation and of the exposures of the worker to noise furnished by the employer under subsection 14(2) shall be kept in a secure place by the physician who has conducted the examinations and tests or under whose supervision the examinations and tests have been made for,

(a) a period of forty years from the time such records were first made; or

(b) a period of twenty years from the time the last of such records were made,

whichever is the longer."

The above section 15(1) and reference to subsection 14(2) therein were renumbered 19(1) and 18(2), respectively, in the November, 1982 proposed noise regulation and this section now reads as follows:

"19. (1) The records of medical examinations and clinical tests of a worker obtained and made under this Regulation and of the exposures of the worker to noise furnished by the employer under subsection 18(2) shall be kept in a secure place by the physician who has conducted the examinations and tests or under whose supervision the examinations and tests have been made for,

(a) a period of forty years from the time such records were first made; or

(b) a period of twenty years from the time the last of such records were made,

whichever is the longer.

Responsibility For Storing Medical Records

The phrase in section 13(2) of the 1980 version which reads, "shall be kept in a

secure place by the physician and the employer, as the case may be" gave rise to some confusion. Ford Canada queried whether this meant that the employer was responsible for the medical records.

Section 13(2) has been relocated to section 16(1) of the June, 1981 revised regulation. Section 16 deals entirely with the storage of medical records. The wording of section 16(1) clearly states that medical record-keeping is the sole responsibility of the examining physician. Furthermore, the phrase "records ... of the exposures of the worker to noise furnished by the employer ... shall be kept in a secure place by the physician", has been added, making it clear that the worker's exposure record is considered to be a part of his medical record and must be kept the same length of time.

Revision of the 1980 Proposed Regulation, Section 13(3) - Responsibility for Storing Medical Records

Section 13(3) of the 1980 version remains largely unchanged but has been relocated to section 16(2) of the June, 1981 revised regulation. The difficulty of storing records for long periods of time is adequately dealt with in this section as the physician may forward the records to the Ministry or to a designated physician if he no longer wishes to keep them.

Since it is the physician who is responsible for the maintenance of medical records, reference to the employer was removed. This section was relocated to section 16(2) of the June, 1981 revised regulation. No comments on this section 13(3) were received and it remains largely unchanged.

Section 13(3), now section 16(2) of the June, 1981 revised regulation, reads as follows:

> "16. (2) Where the physician is no longer able or willing to keep the records, the records shall be forwarded to the Chief Physician, Occupational Health Medical Service of the Ministry, or a physician designated by the Chief Physician and the provisions of subsection 1 shall, with necessary modifications, apply."

Comments Received After the June 24, 1981 Meeting - Section on the Responsibility for Storing Medical Records

No comments were received concerning the above subject as it appears in section 16(2) of the June, 1981 version.

Revision Made after the June, 1981 Meeting - Section on the Responsibility for Storing Medical Records

The word "thereto" was added after "apply" at the end of the sentence in keeping with the wording in the Lead Regulation. This section was also relocated to 15(2), since section 6 was deleted, and the November, 1981 section 15(2) reads as follows:

> "15. (2) Where the physician is no longer able or willing to keep the records, the records shall be forwarded to the Chief Physician, Occupational Health Medical Service of the Ministry, or a physician designated by the Chief Physician and the provisions of subsection (1) shall, with necessary modifications, apply thereto."

Access of the Workers' Authorized Agent to the Exposure and Medical Records of the Worker

Section 13(4) of the 1980 proposed regulation stated that the personal exposure records of a worker and his medical records were to be made available to the worker or his authorized agent.

Section 17(3) of the June, 1981 revised regulation provides adequately for the access of workers to their own medical records while maintaining the confidentiality of these records with respect to third parties. Furthermore, the provisions of section 16(1) of the June, 1981 revised regulation state that the exposure records are now part of these medical records. Thus, it was no longer necessary to retain section 13(4) and it was deleted from the regulation.

Revision of 1980 Proposed Regulation - Section on the Access to the Workers' Exposure and Medical Records

The provisions of sections 13(4) and 12(2) of the 1980 version which allowed the

release of the results of medical examinations and tests and medical records to the worker's authorized agent were interpreted by some respondents as a violation of medical confidentiality. The revisions made to these sections took into account the recommendations of the Honourable Mr. Justice Horance Krever in the Report on the Commission of Inquiry into the Confidentiality of Health Information. Provisions in these sections are now in section 17(3) of the June, 1981 revised regulation. Section 13(4) of the 1980 version has been deleted from the regulation, and reference to the "authorized agent" has been removed. Section 17(3) of the June, 1981 revision reads as follows:

> "17. (3) Copies of the exposure records and the records and results of medical examinations and clinical tests of a worker shall be given to the worker or his physician by the physician conducting the examinations or tests upon the request in writing of the worker or, in the case of a deceased worker, of his next of kin, and any authorization of another person by the worker or his next of kin to obtain and receive such copies is of no effect."

Comments Received after the June 24, 1981 Meeting - Section on the Access to Workers' Exposure and Medical Records

Representatives from the Canadian Battery Manufacturers' Association and from Kelsey-Hayes Canada Limited believe strongly that companies must have access to the results of audiometric tests. Such access is needed to enable companies to determine the effectiveness of their hearing conservation programs and to institute changes when required. This matter concerning access to medical records was addressed in the discussion above.

Revisions Made after the June 24, 1981 Meeting - Section on the Access to Workers' Exposure and Medical Records

Because section 6 was deleted from the June, 1981 revised regulation, section 17 was relocated to section 16 in the November, 1981 revised regulation. Subsection 3 was relocated to subsection 4 since a new section 16(3) dealing with information given by the physician to the joint health and safety committee, was introduced. Sections 16(3) and 16(4) in the November, 1981 revised regulation were modelled after corresponding sections in the Lead Regulation and the other proposed designated substances regulations, and read as follows:

"16. (3) Upon advising the employer and the worker that a worker is fit with limitations or unfit for work in noise the physician shall advise in writing upon a confidential basis the joint health and safety committee thereof and in giving such advice shall indicate his opinion as to the interpretation to be placed thereon.

(4) Copies of the exposure records and the records and results of medical examinations and clinical tests of a worker shall be given by the physician conducting the examinations or tests,

(a) to the worker or his physician upon the request in writing of the worker; and

(b) in the case of a deceased worker, to the next of kin or personal representative of the worker, upon the request in writing of such next of kin or personal representative,

and any authorization of another person by the worker, his next of kin or personal representative is of no effect."

Subsections (3) and (4) of the above section were relocated to 20(3) and 20(4), respectively, in the November, 1982 version of the proposed noise regulation. In addition, subsection 20(4) now refers to "records of the sound levels to which a worker is subjected" rather "exposure records" as used in subsection 16(4) in the November, 1981 version. Subsections 20(3) and 20(4) in the November, 1982 read as follows:

"20 (3) Upon advising the employer and the worker that a worker is fit with limitations or unfit for work in noise the physician shall advise in writing upon a confidential basis the joint health and safety committee thereof and in giving such advise shall indicate his opinion as to the interpretation to be placed thereon.

(4) Copies of the records of the sound levels to which a worker is subjected and the records and results of medical examinations and clinical tests of a worker shall be given by the physician conducting the examinations or tests,

(a) to the worker or his physician upon the request in writing of the worker; and

(b) in the case of a deceased worker, to the next of kin or personal representative of the worker, upon the request in writing of such next of kin or personal representative,

and any authorization of another person by the worker, his next of kin or personal representative is of no effect."

METHODS OF NOISE MEASUREMENT

Section 14 of the 1980 proposed regulation required that the methods of determining the sound levels to which a worker is exposed must be in accordance with those outlined in the Code for Noise Measurement.

Revision of the 1980 Proposed Regulation, Section 14 - Methods of Noise Measurement

Section 14 has been relocated to section 12 in the June, 1981 revised regulation and is largely unchanged. The date of the Code for Noise Measurement has been changed since the code had been revised. Section 12 reads as follows:

"12. Subject to section 18, the procedure for monitoring, and determining, the noise level in a work place and the exposure of a worker thereto, shall be those set out in the Code for Noise Measurement dated the 23rd day of June, 1981 and issued by the Ministry."

Comments Received after the June 24, 1981 Meeting - Section on the Methods of Noise Measurement

No comments on this section were received. However, the CSA recommended elsewhere that "noise level" should be replaced by "sound level". If the measured sound level is 80 dBA or greater, the "sound" may then be characterized as "noise".

Revisions Made following the June 24, 1981 Meeting - Section on the Methods of Noise Measurement

The change suggested by the Canadian Standards Association was incorporated. The reference to section 18 was changed to section 17, and section 12 in the June, 1981 revised regulation was relocated to section 11 since section 6 was deleted and the November, 1981 revision of this section reads as follows:

> "11. Subject to section 17, the procedures for monitoring and determining the sound level in a work place and the exposure of a worker thereto shall be those set out in the Code for Noise Measurement dated the 23rd day of November, 1981, and issued by the Ministry."

Following changes made in the exposure limit, section 11 and reference to section 17 therein, the November, 1981 version were renumbered sections 9 and 21, respectively. Since the Code for Noise Measurement was also modified, the date of the code was changed to November 5, 1982 from November 23, 1981. Section 9 of the November, 1982 version reads as follows:

> "9. Subject to section 21 the sound levels shall be determined in accordance with the provisions in the Code for Noise Measurement dated the 5th day of November, 1982, and issued by the Ministry."

POSTING AND STORAGE OF MONITORING RESULTS

Section 15 of the 1980 proposed regulation dealt with the posting and storage of noise monitoring results.

Posting of Noise Monitoring Results

Only the Mines Accident Prevention Association and Dow objected to the posting of monitoring results in the work place. They would prefer that the data be presented at a joint health and safety committee meeting so that the significance of the results could be properly explained.

This suggestion was not accepted as it is believed that each worker should be informed of the noise levels to which he/she is being exposed on the job.

Storage Period of Noise Monitoring Results

The United Steelworkers recommended that the results of noise monitoring should be kept the same length of time as the worker's medical records (20 to 40 years) instead of five years. This will, in fact, occur as the worker's exposure record now forms part of his medical records.
Ontario Hydro stated that the storage period of five years was too long.

Revision of the 1980 Proposed Regulation, Section 15 - Posting and Storage of Monitoring Results

Section 15 of the 1980 version was relocated to section 13 of the revised June, 1981 regulation.

A few changes were made for clarity to section 13(a). The phrase "committee of like nature or the workers or their representatives who participate in an arrangement, plan or program mentioned in subsection 3 of section 7" has been added to section 13(b). Section 13(c) now stipulates that the employer must keep the results of noise monitoring to clarify who is to maintain these records.

Section 13 of the June, 1981 revised regulation reads as follows:

"13. The results of monitoring of noise in the work place and the exposure of a worker thereto shall be,

(a) posted forthwith by the employer, as soon as the results are available, in a conspicuous place or places at the work place where they are most likely to come to the attention of the workers affected thereby for a period of at least fourteen days;

(b) furnished to the joint health and safety committee, committee of like nature of the workers or their representatives who participate in an arrangement, plan or program mentioned in subsection 3 of section 7; and

(c) kept by the employer for a period of at least five years."

Comments Received after the June 24, 1981 Meeting - Section on the Posting and Storage of Monitoring Results

No new issues regarding this section were raised in comments received.

Revisions Made following the June 24, 1981 Meeting - Section on the Posting and Storage of Monitoring Results

Some changes in the wording and deletions from section 13(b) of the June, 1981 revised regulation were made after examining the changes in the Lead Regulation, which was reviewed by legislative counsel, and in other designated substances regulations. In addition, section 13 of the June, 1981 revised regulation was relocated to section 12 in the November, 1981 revision and reads as follows:

"12. The results of monitoring of noise in the work place and the exposure of a worker thereto as provided by the hearing conservation program shall be,

(a) posted forthwith by the employer, as soon as the results are available, in a conspicuous place or places at the work place where they are most likely to come to the attention of the workers affected thereby, for a period of at least fourteen days;

(b) furnished to the joint health and safety committee; and

(c) kept by the employer for a period of at least five years."

Because of the changes made in the exposure limit, the phrase "and the exposure of a worker thereto" was deleted from section 12 in the November, 1981 version and the section was relocated to section 16 in the November, 1982 version. This section now reads:

"16. The results of monitoring of noise in the work place as provided by the hearing conservation program shall be,

(a) posted forthwith by the employer, as soon as the results are available, in a conspicuous place or places at the work place where they are most likely to come to the attention of the

workers affected thereby, for a period of at least fourteen days;

(b) furnished to the joint health and safety committee; and

(c) kept by the employer for a period of at least five years."

WORKER'S EXPOSURE RECORD

Section 16 of the 1980 proposed regulation listed the information that must be included in a worker's personal exposure record, that is the records that document the results of monitoring and the extent to which the worker has been exposed over a period of time.

Recording Use of Personal Hearing Protection

Several respondents, including Chrysler, B.F. Goodrich and General Motors, argued that the maintenance of personal exposure records as required by the section would be impractical from an administrative standpoint. Several briefs (Imperial Oil, DuPont, B.F. Goodrich, the Ontario Occupational Health Nurses Association, Port Weller Dry Docks, the Canadian Chemical Producers' Association, Algoma Steel, the American Industrial Hygiene Association, Ontario Hydro, Gulf Canada, the Ontario Petroleum Association) stated that it is highly impractical to record the dates and exact length of time that a worker used personal protective equipment.

The amount of detail required on the use of personal hearing protection was therefore reconsidered. The requirement for recording the dates and length of time of use was removed. Instead, records must show whether personal hearing protection is used or not and which type of hearing protection was used.

Detail of Work Operations Performed

Ford Canada, Chrysler and General Motors pointed out the impracticability of detailing every work operation of each worker at a larger work place involving hundreds or thousands of workers. They suggested that some form of job code description should be allowed to take the place of a detailed job description.

The requirement for detailing the work operations performed has been removed from the regulation. However, for the purposes of future epidemiological studies, this information would be extremely valuable and should be recorded where practicable.

Requirement for Maiden Surname of Worker's Mother

Inco, the American Industrial Hygiene Association, the Ontario Petroleum Association, Gulf Canada, the Canadian Paint and Coatings Association, and General Motors questioned the need to record the maiden surname of the worker's mother. Some were concerned that this might be an invasion of the worker's privacy. Canadian General Electric stated that this requirement may be in violation of the Ontario Human Rights Code.

The requirement for the mother's maiden surname has been eliminated in the revised regulation, but because this information is important for future epidemiological studies, it should be added to a worker's record where possible.

Revision of the 1980 Proposed Regulation, Section 16 - Worker's Exposure Record

Section 16 was relocated to section 15(1) in the June, 1981 revised regulation. In addition to the above changes, the word "personal" has been eliminated since some respondents understood the phrase "personal records" to imply personal noise measurement.

Section 15(1) of the June, 1981 revised regulation reads as follows:

> "15. (1) The records of the exposures of each worker to noise at the work place to be maintained under the hearing conservation program shall identify the worker, including his date of birth, his jobs or occupations at the work place, the results of monitoring for his exposure to noise in his work area and the use by the worker of hearing protection equipment and its type."

Comments Received after the June 24, 1981 Meeting - Section on the Worker's Exposure Record

No comments were received which suggested recommended changes in this

section. Dow Chemical suggested that the retention period by the same (i.e. 40 years) for work history and exposure, as required in this section, and for the medical history and examination records. Section 13(2) of the 1980 revised regulation requires that the employer retain the work history and exposure data "for at least five years".

Revisions Made after the June 24, 1981 Meeting - Section on the Worker's Exposure Record

Only minor word changes were made to make the wording of this section consistent with that in the Lead Regulation and the other designated substances regulations. Because section 6 of the June, 1981 revised regulation was deleted, section 15(1) of that regulation was relocated to section 14(1) in the November, 1981 revision which reads:

> "14. (1) The records of the exposures of each worker to noise at the work place to be maintained as provided by the hearing conservation program shall identify the worker, including his date of birth, his jobs or occupations at the work place, the results of monitoring for his exposure to noise in his work area and the use by the worker of hearing protection equipment and its type."

In keeping with the changes made in the exposure limit the phrase "exposure of each worker to noise" was reworded "sound levels to which a worker is subjected". Section 14(1) in the November, 1981 version was relocated to section 18(1) in the November, 1982 version and it reads as follows:

> "18. (1) The records of the sound levels to which a worker is subjected at the work place to be maintained as provided by the hearing conservation program shall identify the worker, including his date of birth, his jobs or occupations at the work place, the results of monitoring for noise in his work area and the use by the worker of hearing protection equipment and its type."

EQUIVALENCY OF METHODS SPECIFIED IN CODES

Section 17 of the 1980 proposed regulation allowed for the use of alternative methods and procedures to measure a worker's noise exposure, if these methods

were at least as accurate and precise as those in the codes. However, Dow, Gulf Canada, the Ontario Petroleum Association, Inco, Toronto Transit Commission, and the Confederation of Canadian Unions requested a mechanism for establishing the equivalency of a particular method to those in the Ministry codes. It was felt that the criteria of precision and accuracy would be adequate for establishing the equivalency of other techniques.

Revision of the 1980 Proposed Regulation, Section 17 - Equivalency of Methods Specified in the Codes

Section 17 in the 1980 version has been relocated to Section 18 in the June, 1981 revised regulation. The equivalency provision has been extended to the other codes by the inclusion of the phrase "if the protection afforded thereby ..." in the section, which reads as follows in the June, 1981 proposed regulation:

> "17. For the purposes of this Regulation the methods and procedures that may be used or adopted may vary from the Codes issued by the Ministry if the protection afforded thereby or the factors of accuracy and precision used or adopted are equal to or exceed the protection or the factors of accuracy and precision in the Codes issued by the Ministry."

Comments Received after the June, 1981 Meeting - Section on the Equivalency of Methods Specified in the Codes

No recommendations to change this section were received.

Revisions Made Following the June 24, 1981 Meeting - Section on the Equivalency of Methods Specified in the Codes

Because section 6 of the June, 1981 revised regulation was deleted, section 18 of that regulation was relocated to section 17 in the November, 1981 revision which now reads:

> "17. For the purposes of this Regulation the methods and procedures that may be used or adopted may vary from the Codes issued by the Ministry if the protection afforded thereby or the factors of accuracy and precision used or adopted are equal to or exceed the protection or

the factors of accuracy and precision in the Codes issued by the Ministry."

In the November, 1982 version the above section was relocated to section 21 and reads as follows:

"21. For the purposes of this Regulation the methods and procedures that may be used or adopted may vary from the Codes issued by the Ministry if the protection afforded thereby or the factors of accuracy and precision used or adopted are equal to or exceed the protection or the factors of accuracy and precision in the Codes issued by the Ministry."

REVOCATION OF SECTION 144 OF O.REG. 658/79 (REG. 692, R.R.O., 1980)

This section provided for the revocation of section 144 of the Ontario Regulation 658/79 which deals with noise. There were no comments on this section. It has been relocated to section 19 in the June, 1981 revised regulation.

Comments Received after the June, 1981 Meeting - Section on the Revocation of Section 144

No comments were made regarding this section.

Revisions Made Following the June 24, 1981 Meeting - Section on the Revocation of Section 144

The revised citation for Regulations for Industrial Establishments (O.R. 658/79) has been entered in section 18. Because section 6 of the June, 1981 revised regulation was deleted, section 19 of the regulation was relocated to section 18 in the November, 1981 revision which now reads:

"18. Section 144 of Regulation 692 of the Revised Regulations of Ontario, 1980 is revoked."

In the November, 1982 version, the above section has been relocated to section 22 and reads as follows:

"22. Section 144 of Regulation 692 of Revised Regulations of Ontario, 1980 is revoked."

EFFECTIVE DATES OF REGULATION

Section 19 of the 1980 proposed regulation stipulated the dates upon which various sections of the regulation were to come into force.

Ford Canada, the Ontario Petroleum Association, the Canadian Manufacturers' Association and Stelco stated that more than 90 days were needed to implement the requirements of the regulation. Stelco and the Confederation of Canadian Unions both requested a timetable for compliance with the regulation.

Revision of the 1980 Proposed Regulation, Section 19 - Effective Dates of Regulation

Because Section 19 was widely accepted, no substantive changes were made in this section. It has been relocated to section 20 in the June, 1981 version, and the sections referred to in it have been renumbered.

Section 20 of the June, 1981 revised regulation reads as follows:

"20. (1) This Regulation, except sections 4 to 6, 8, 9, and 11 to 18 comes into force on the day this Regulation is filed.

(2) Sections 4 to 6, 8, 9, and 11 to 18 come into force 90 days after the day this Regulation is filed."

Comments Received after the June 24, 1981 Meeting - Section on the Effective Dates of the Regulation

Stelco recommended that section 15 come into effect 18 months after the regulation is filed. Again, the recommendation to change the dates for compliance was not accepted.

Revisions Made following the June 24, 1981 Meeting - Section on the Effective Dates of the Regulation

Section 19 of the June, 1981 regulation was added in the section dealing with the dates on which the other sections of the Regulation come into effect. This change causes the existing noise limits prescribed in section 144 of the Regulation for Industrial Establishments to be revoked on the same day as the new limits come into force.

Because section 6 of the June, 1981 revised regulation was deleted, section 20 of that regulation was located to section 19 in the November, 1981 revision. The sections referred to in this section were changed appropriately so that section 19 of the November, 1981 version now reads:

"19. (1) This Regulation, except sections 4, 5, 7, 8, and 10 to 17 comes into force on the day this Regulation is filed with the Registrar of Regulations.

(2) Sections 4, 5, 7, 8, and 10 to 17 come into force 90 days after the day this Regulation is filed with the Registrar of Regulations."

In the November, 1982 version the above section was relocated to section 23 and references to sections therein were changed appropriately so that this section reads as follows:

"23. (1) This Regulation, except sections 5 to 10, 12, 13, and 15 to 22 comes into force on the day this Regulation is filed with the Registrar of Regulations.

(2) Sections 5 to 10, 12, 13, and 15 to 22 come into force 90 days after the day this Regulation is filed with the Registrar of Regulations."

ANALYSIS OF COMMENTS ON THE PROPOSED NOISE CODES

The August, 1980 draft of the proposed noise regulation was accompanied by only one code, "Code for Determining Noise Levels".

Following the review of the public comments received, it was decided that the noise measurement code required revision and that it was desirable to prepare additional codes.

The June 24, 1981 version of the proposed noise regulation was accompanied by four codes:

- Code for Hearing Protection of Noise-Exposed Workers (Appendix K)
- Code for Audiometry of Noise-Exposed Workers (Appendix L)
- Code for Noise Measurement (Appendix M)
- Code for Medical Surveillance of Noise-Exposed Workers (Appendix N)

Following the June 24, 1981 public meeting concerning the proposed noise regulation, approximately 60 briefs were received which offered many editorial and technically-oriented comments. In light of the public comments received a large number of the changes were made on what may be considered the first publically-available draft of the codes. The main points raised in the briefs and the action taken are summarized here. A number of editorial changes were made to clarify or shorten some sections of the codes; comments made on sections which were deleted during this process are not included here. The interested reader can refer to Appendices K to N for the June 23, 1981 version presented at the public meeting and the most recent version.

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1. Code for Hearing Protection of Noise-Exposed Workers

(1) Comment

The target sound level with hearing protection should be changed from 80 dBA to 85-90 dBA.

Action

The target sound level has been changed to 85 dBA.

(2) Comment

The noise reduction rating (NRR) should include a 3 dB correction factor.

Action

This recommendation was accepted.

(3) Comment

Include advantages and disadvantages of hearing protectors and other factors regarding comfort, visibility, size, weight, etc.

Action

Advantages and disadvantages have been included as recommended. Inclusion of other factors was rejected because there are no objective standards for evaluating such factors which could compromise selection of hearing protection on the basis of attenuation.

(4) **Comment**

Record-keeping requirements are not practical.

Action

The record-keeping requirements have been maintained to be consistent with the requirements for respiratory equipment as for the Lead Regulation.

2. **Code for Audiometry of Noise-Exposed Workers**

(1) **Comment**

Exclude the requirement for a sound-proof booth in audiometric testing.

Action

This requirement was maintained as per CSA Standard Z107.4-1975 (Amended 1980) and the recommendations of the members of the CSA Subcommittee on Hearing Measurement.

(2) **Comment**

Exclude the 250 Hz octave band centre frequency from the requirements for background sound levels in audiometric sound-proof booths.

Action

It was decided to maintain 250 Hz but a compromise has been introduced at both 250 and 500 Hz which increases the ceiling for allowable background sound levels. Because of this compromise further noise abatement techniques and acoustic treatment of sound rooms should not be required.

(3) **Comment**

The Ministry of Labour should provide individual certification for Industrial Audiometric Technicians.

Action

It is not feasible for the Ministry to certify technicians; indeed, this would represent a departure in policy regarding other types of technicians.

(4) **Comment**

The Ministry of Labour should approve audiometry courses.

Action

The code references CSA requirements for training courses. It also stipulates that individuals must attend a program as defined in this standard. The Ministry will liaise with the Ministry of Colleges and Universities in an attempt to establish standards for audiometry programs.

(5) **Comment**

The Ministry of Labour should provide criteria for (i) analysis of audiometric data, and (ii) guidelines for physicians in the assessment of a worker's fitness to continue working in noise exposure.

Action

These comments have been adequately addressed in the Code for Medical Surveillance of Noise-Exposed Workers.

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(6) **Comment**

The audiograms should be available to the employer for monitoring of the hearing conservation program.

Action

This comment has been addressed in the Code for Medical Surveillance of Noise-Exposed Workers.

3. **Code for Noise Measurement**

(1) **Comment**

(a) The code should provide appropriate methods and procedures that will allow those taking measurements to document properly the sound levels to which workers are exposed and to comply with the intent of the regulation.

(b) Descriptive and explanatory information should be kept to a minimum.

(c) The code should be a precise document rather than an information document.

Action

Methods and procedures were given in the June 24, 1981 code. Further changes have been made to fully accommodate the recommendation and precision was enhanced by frequent use of the verb "must".

(2) **Comment**

The name of the exposure parameter in the proposed noise regulation should be changed from "equivalent continuous sound level" to "equivalent sound exposure level, L_{ex}".

Action

This recommendation was adopted. Because of this change, other changes had to be made in sections of the code which deal with compliance calculations.

(3) **Comment**

Specific reference to the ISO Standard 1999-1975 should not be made in the code because the terminology used in this standard is outdated. Also the use of equations to calculate L_{ex} is sufficient, and there should be no reference to the ISO tables as a method of calculation.

Action

This recommendation was adopted and appropriate changes were made.

(4) **Comment**

Examples of L_{ex} calculations are useful to illustrate and clarify the method of L_{ex} determination.

Action

Examples were included in the June 24, 1981 code. Further refinements were made.

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(5) **Comment**

If a sound level meter is used in impulse noise measurement, it must have Type 1 tolerances. A Type 2 sound level meter should not be used for impulse noise.

Action

This recommendation was adopted and appropriate changes were made.

(6) **Comment**

The use of the "fast" response of a sound level meter should be restricted to distinguishing between impulse and non-impulse noise. All other references to the "fast" response should be dropped.

Action

This recommendation was adopted and appropriate changes were made.

(7) **Comment**

The code should include a reference to measurements in potentially explosive atmospheres.

Action

The appropriate change was made in section 3(3)(c) "Environmental Conditions".

(8) **Comment**

Oil refinery operations require the use of intrinsically safe equipment. The only intrinsically safe dosimeter currently on the market operates in the range 80-115 dB, so the code should not specify an operating range of 80 to 120 dB or higher.

Action

This suggestion was accommodated by incorporating the following statement in section 2(3)(g) of the code: "operating range of 80-120 dB, or otherwise sufficient to meet the requirements of the measurement".

(9) **Comment**

The orientation of an instrument's microphone must be specified to be in accordance with the manufacturer's specifications.

Action

This issue was addressed in the June 24, 1981 code and further refinements have been made.

(10) **Comment**

(a) Sound level meters and dosimeters should be permitted to be used on an equal basis without a preference specified.

(b) The code should specify procedures which would ensure that assessments with different instruments are equivalent.

Action

The use of three types of instruments was allowed in the June 24, 1981 code, but the stated preferences have been removed. To ensure equivalency of measurement and assessment, the code now specifies that worker must be present when personal exposure measurements are taken with a sound level meter.

(11) **Comment**

The code must recognize the slight discrepancy (typically 3 dB) between the results provided by a dosimeter and a sound level meter. The presence of the worker tends to influence the dosimetry measurement.

Action

This recommendation was adopted and appropriate changes were made.

(12) **Comment**

The code should not specify that the worker must be absent when measurements are taken since there are many instances where equipment cannot operate without the worker present.

Action

The code now specifies that the worker must be present for personal exposure measurement. However, in area noise measurement, there is no specifications regarding the presence of a worker.

(13) **Comment**

The code should state that impulse noise should not be measured with a dosimeter unless the instrument is specified for such application.

Action

This recommendation was adopted and appropriate changes were made.

(14) **Comment**

It is desirable to be able to assess impulse and non-impulse noise on a common basis.

Action

This is accommodated in the noise regulation and the code by the exposure parameter L_{ex} which takes into account exposure to continuous and impulse noise on an energy basis. This can be done because the exchange rate is 3 dB, and instruments such as dosimeters and integrating sound level meters provide a true measure of sound energy.

(15) **Comment**

(a) Instrument standards which are not yet passed should not be quoted.

(b) The code should reference the most up-to-date standards including those that are imminent but not yet published.

Action

In compromising between these conflicting views, the code now specifies compliance only with adopted standards pending the publication of more up-to-date standards.

(16) **Comment**

The code should address the measurements needed for the selection of hearing protectors.

Action

This recommendation was adopted and appropriate changes were made.

(17) **Comment**

Reference in the code to octave-band measurements is unnecessary.

Action

This recommendation was rejected. Measurements at various frequencies are required for selection of hearing protectors and determining background noise levels in audiometric sound-proof booths.

(18) **Comment**

Extensive record-keeping is not practical in a large company with thousands of work stations.

Action

This comment is addressed in code by stating in section 5 that specified "information should be included in noise measurement records". The verb "should" provides flexibility in the amount of information to be recorded.

(19) **Comment**

The code should specify that personnel performing measurements must have training and experience in noise measurement and assessment.

Action

This comment was considered and rejected as not feasible. There is no mechanism for the Ministry of Labour to certify personnel and/or approve training courses.

(20) **Comment**

The revisions to the proposed regulation, dated November 10, 1982 and included in Appendix Jc, required appropriate changes in the following sections of Appendix Mb "Code for Noise Measurement November 23, 1981": 2(3), 2(4), 3(1), 3(2), 3(3)(e) - 3(3)(m), 3(4)(a)(ii) and (iii), 3(4)(b)(ii) and (iii), 3(4)(c)(ii) and (iii), 3(4)(d), 4, 5.

4. **Code for Medical Surveillance of Noise-Exposed Workers**

(1) **Comment**

Definition of significant threshold shift as a change of 10 dB average over 2, 3 and 4 kHz too stringent.

Action

This comment was accepted. Significant threshold shift is now defined in Code for Audiometry of Noise-Exposed Workers as a difference of 20 dB at 3 or 4 KHz compared to the baseline or previous audiogram.

The examining physician must review such workers if the shift is confirmed.

(2) **Comment**

The qualifications of the examining physician are not defined. Specialized training must be provided.

Action

The physician has to be engaged and paid by the employer, and he will need to have the confidence of the worker and the health and safety committee. His qualifications cannot therefore be determined by the Ministry of Labour. Physicians have the code to guide them.

(3) **Comment**

Analysis of audiometric data on a group basis is required for effective monitoring of a hearing conservation program.

Action

This proposal has been adopted in the code (section 3(c)) and the physician should provide the joint health and safety committee with an annual report, summarizing the results of audiometric tests.

(4) **Comment**

In Section 6 on record-keeping it could be preferable to use "must" rather than "should".

Action

The suggested list is very extensive and all the data may not be available. The physician has to have some discretion therefore.

(5) **Comment**

Counselling of the worker should be the duty of the technician as well as the physician.

Action

This suggestion is taken up in the Code for Audiometry of Noise-Exposed Workers, section 4, and the audiometric technician may now discuss the results of the audiogram with the worker if so directed by the physician.

(6) **Comment**

"Medical examination and clinical tests" should be replaced by "health assessment".

Action

The terminology used is consistent with that in the other designated substances regulations. To prevent any misunderstanding section 13 of the regulation has been amended to delete the details of the medical examination and tests. The section now references the Code for Medical Surveillance of Noise-Exposed Workers. The medical examinations and clinical tests conducted by the physician or under his direction must include a history, otoscopic examination under certain circumstances, and audiometry.

(7) **Comment**

The frequency of periodic tests should be specified with respect to noise level exposure.

Action

The Ministry of Labour feels that this is a judgement decision that should be left to the examining physician, but that the audiometric tests should at least be biennial.

(8) **Comment**

Why refer to the Workmen's Compensation Board (WCB) all cases with a hearing defect of 25 dB at 0.5, 1, 2 and 3 kHz?

Action

At this level the WCB can accept the claim if the hearing loss is attributable to noise and therefore the worker should be referred to the WCB.

Compendium of Comments

Copies of the compendium of comments made on the codes are available for reference in the Ministry of Labour library.

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KF 3813 .057 1982 v.2 WCAT
The Report on the
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